

## \*\*\*\*\*SECTION 1: INVENTOR RESULTS\*\*\*\*\*

=&gt; d que 185

L3 1 SEA FILE=REGISTRY ABB=ON PLU=ON ASTAXANTHIN/CN  
 L4 1 SEA FILE=REGISTRY ABB=ON PLU=ON 472-61-7  
 L5 1 SEA FILE=REGISTRY ABB=ON PLU=ON (L3 OR L4)  
 L6 7 SEA FILE=REGISTRY ABB=ON PLU=ON 472-61-7/CRN  
 L7 8 SEA FILE=REGISTRY ABB=ON PLU=ON (L3 OR L4 OR L5 OR L6)  
 L8 2510 SEA FILE=HCAPLUS ABB=ON PLU=ON L7  
 L9 3 SEA FILE=REGISTRY ABB=ON PLU=ON (TAGETES/CN OR "TAGETES  
 ERECTA, EXT."/CN OR "TAGETES MINUTA, EXT."/CN OR "TAGETES  
 PATULA, EXT."/CN)  
 L10 0 SEA FILE=REGISTRY ABB=ON PLU=ON 91770-75-1/CRN  
 L11 0 SEA FILE=REGISTRY ABB=ON PLU=ON 91722-29-1/CRN  
 L12 0 SEA FILE=REGISTRY ABB=ON PLU=ON 90131-43-4/CRN  
 L13 0 SEA FILE=HCAPLUS ABB=ON PLU=ON L9  
 L14 812 SEA FILE=HCAPLUS ABB=ON PLU=ON TAGETES+NT/CT  
 L15 173 SEA FILE=HCAPLUS ABB=ON PLU=ON TAGETES/CT  
 L16 1 SEA FILE=HCAPLUS ABB=ON PLU=ON "TAGETES BIFLORA"/CT  
 L17 1 SEA FILE=HCAPLUS ABB=ON PLU=ON "TAGETES BIPINATA"/CT  
 L18 315 SEA FILE=HCAPLUS ABB=ON PLU=ON "TAGETES ERECTA"/CT  
 L19 1097 SEA FILE=HCAPLUS ABB=ON PLU=ON TAGETES?  
 L20 2506 SEA FILE=HCAPLUS ABB=ON PLU=ON ASTAXANTHIN/CT  
 L21 4 SEA FILE=HCAPLUS ABB=ON PLU=ON "EUBACTERIA (L) ASTAXANTHIN-PR  
 ODUCEING"+OLD/CT  
 L22 2990 SEA FILE=HCAPLUS ABB=ON PLU=ON ASTAXANTHIN? OR ASTAREAL OR  
 BIOASTIN? OR NATUPINK? OR NATUROSE? OR OVOESTER? OR CAROPHYLL?  
 OR TRANS ASTAXANTHIN  
 L23 4149 SEA FILE=HCAPLUS ABB=ON PLU=ON (L3 OR L4 OR L5 OR L6 OR L7  
 OR L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15 OR L16  
 OR L17 OR L18 OR L19 OR L20 OR L21 OR L22)  
 L25 590916 SEA FILE=HCAPLUS ABB=ON PLU=ON 17/SC,SX  
 L26 797 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 AND L25  
 L27 9526 SEA FILE=HCAPLUS ABB=ON PLU=ON 17-12/SC,SX  
 L28 81 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 AND L27  
 L29 81 SEA FILE=HCAPLUS ABB=ON PLU=ON L26 AND L27  
 L30 81 SEA FILE=HCAPLUS ABB=ON PLU=ON (L28 OR L29)  
 L31 75 SEA FILE=HCAPLUS ABB=ON PLU=ON L30 AND FEED?  
 L32 81 SEA FILE=HCAPLUS ABB=ON PLU=ON (L30 OR L31)  
 L33 23 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 (L) (PREP OR PROC)/RL  
 L34 42 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND (PROC? OR PREP?)  
 L35 52 SEA FILE=HCAPLUS ABB=ON PLU=ON (L33 OR L34)  
 L36 43 SEA FILE=HCAPLUS ABB=ON PLU=ON L35 AND (PY<2004 OR AY<2004  
 OR PRY<2004)  
 L37 41 SEA FILE=HCAPLUS ABB=ON PLU=ON L36 AND L22  
 L38 43 SEA FILE=HCAPLUS ABB=ON PLU=ON (L36 OR L37)  
 L49 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L38 AND (ANIMAL FEED?)  
 L50 96075 SEA FILE=HCAPLUS ABB=ON PLU=ON FEED+OLD,NT/CT  
 L51 28 SEA FILE=HCAPLUS ABB=ON PLU=ON L38 AND (L49 OR L50)  
 L52 28 SEA FILE=HCAPLUS ABB=ON PLU=ON (L51 OR L49)  
 L53 29 SEA FILE=HCAPLUS ABB=ON PLU=ON "FLACHMANN RALF"/AU  
 L54 217 SEA FILE=HCAPLUS ABB=ON PLU=ON ("SAUER M"/AU OR "SAUER M  
 A"/AU OR "SAUER M C JR"/AU OR "SAUER M C V"/AU OR "SAUER M  
 J"/AU OR "SAUER M K"/AU OR "SAUER M M"/AU OR "SAUER M R"/AU OR

"SAUER M V"/AU OR "SAUER MATT"/AU)

L55 1 SEA FILE=HCAPLUS ABB=ON PLU=ON "SAUER MATTHEW T"/AU

L56 218 SEA FILE=HCAPLUS ABB=ON PLU=ON (L54 OR L55)

L57 25 SEA FILE=HCAPLUS ABB=ON PLU=ON ("SCHOPFER C"/AU OR "SCHOPFER C R"/AU OR "SCHOPFER CHRISTEL"/AU OR "SCHOPFER CHRISTEL R"/AU OR "SCHOPFER CHRISTEL RENATE"/AU)

L58 14 SEA FILE=HCAPLUS ABB=ON PLU=ON "KLEBSATTEL MARTIN"/AU

L59 157 SEA FILE=HCAPLUS ABB=ON PLU=ON ("PFEIFFER A"/AU OR "PFEIFFER A M"/AU OR "PFEIFFER ANGELIKA"/AU OR "PFEIFFER ANGELIKA MARIA"/AU)

L60 50 SEA FILE=HCAPLUS ABB=ON PLU=ON ("LUCK T"/AU OR "LUCK T R"/AU OR "LUCK TH"/AU OR "LUCK THOMAA"/AU OR "LUCK THOMAS"/AU OR "LUCK THOMAS FREDERICK"/AU OR "LUCK THOMAS HOWARD"/AU)

L61 21 SEA FILE=HCAPLUS ABB=ON PLU=ON ("VOESTE D"/AU OR "VOESTE DIRK"/AU)

L62 4 SEA FILE=HCAPLUS ABB=ON PLU=ON L53 AND L56 AND L57 AND L58 AND L59 AND L60 AND L61

L63 13 SEA FILE=HCAPLUS ABB=ON PLU=ON L53 AND (L56 OR L57 OR L58 OR L59 OR L60 OR L61)

L64 13 SEA FILE=HCAPLUS ABB=ON PLU=ON L56 AND (L57 OR L58 OR L59 OR L60 OR L61)

L65 12 SEA FILE=HCAPLUS ABB=ON PLU=ON L57 AND (L58 OR L59 OR L60 OR L61)

L66 4 SEA FILE=HCAPLUS ABB=ON PLU=ON L58 AND (L59 OR L60 OR L61)

L67 4 SEA FILE=HCAPLUS ABB=ON PLU=ON L59 AND (L60 OR L61)

L68 4 SEA FILE=HCAPLUS ABB=ON PLU=ON L60 AND L61

L69 13 SEA FILE=HCAPLUS ABB=ON PLU=ON (L62 OR L63 OR L64 OR L65 OR L66 OR L67 OR L68)

L70 11 SEA FILE=HCAPLUS ABB=ON PLU=ON L69 AND L23

L71 13 SEA FILE=HCAPLUS ABB=ON PLU=ON (L69 OR L70)

L72 12 SEA FILE=HCAPLUS ABB=ON PLU=ON L71 AND (PY<2004 OR AY<2004 OR PRY<2004)

L85 11 SEA FILE=HCAPLUS ABB=ON PLU=ON L72 NOT L52

=> d que 184

L22 2990 SEA FILE=HCAPLUS ABB=ON PLU=ON ASTAXANTHIN? OR ASTAREAL OR BIOASTIN? OR NATUPINK? OR NATUROSE? OR OVOESTER? OR CAROPHYLL? OR TRANS ASTAXANTHIN

L73 69 SEA FLACHMANN R?/AU

L74 2275 SEA SAUER M?/AU

L75 101 SEA SCHOPFER C?/AU

L76 23 SEA KLEBSATTEL M?/AU

L77 1506 SEA PFEIFFER A?/AU

L78 112 SEA LUCK T?/AU

L79 49 SEA VOESTE D?/AU

L80 9 SEA L73 AND L74 AND L75 AND L76 AND L77 AND L78 AND L79

L81 28 SEA (L73 OR L74 OR L75 OR L76 OR L77 OR L78 OR L79) AND L22

L82 27 SEA L81 AND FEED?

L83 28 SEA (L80 OR L81 OR L82)

L84 26 SEA L83 AND (PY<2004 OR AY<2004 OR PRY<2004)

=> dup rem 185,184

FILE 'HCAPLUS' ENTERED AT 14:41:58 ON 13 MAR 2007

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

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FILE 'WPIX' ENTERED AT 14:41:58 ON 13 MAR 2007

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PROCESSING COMPLETED FOR L85

PROCESSING COMPLETED FOR L84

L86 20 DUP REM L85 L84 (17 DUPLICATES REMOVED)

ANSWERS '1-17' FROM FILE HCAPLUS

ANSWERS '18-20' FROM FILE WPIX

=&gt; d ibib abs retable l86 tot

L86 ANSWER 1 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 2005:182845 HCAPLUS Full-text

DOCUMENT NUMBER: 142:275033

TITLE: Method for producing ketocarotenoids in genetically modified, non-human organisms

INVENTOR(S): **Flachmann, Ralf; Schopfer, Christel Renate;** Herbers, Karin; Kunze, Irene; **Sauer, Matt; Klebsattel, Martin; Luck, Thomas; Voeste, Dirk; Pfeiffer, Angelika-Maria**

PATENT ASSIGNEE(S): Sungene GmbH &amp; Co. Kgaa, Germany

SOURCE: PCT Int. Appl., 358 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 14

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005019467	A1	20050303	WO 2004-EP8623	20040731 <--
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
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WO 2004018688	A1	20040304	WO 2003-EP309101	20030818 <--
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RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
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WO 2004018693	A3	20041209		
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LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,  
 PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,  
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 WO 2004018385 A2 20040304 WO 2003-EP309105 20030818 <--  
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 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,  
 PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,  
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 WO 2004018694 A2 20040304 WO 2003-EP309106 20030818 <--  
 WO 2004018694 A3 20040910  
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 PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,  
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 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
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 WO 2004018695 A2 20040304 WO 2003-EP309107 20030818 <--  
 WO 2004018695 A3 20041014  
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 PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,  
 TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
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 FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,  
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 WO 2004017749 A2 20040304 WO 2003-EP309109 20030818 <--  
 WO 2004017749 A3 20041014  
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 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,  
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,  
 PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,  
 TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
 KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,  
 FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,  
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG  
 DE 102004007622 A1 20050825 DE 2004-102004007622 20040217  
 AU 2004267196 A1 20050303 AU 2004-267196 20040731 <--  
 CA 2535972 A1 20050303 CA 2004-2535972 20040731 <--  
 EP 1658377 A1 20060524 EP 2004-741347 20040731 <--  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,

IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

CN 1863922	A	20061115	CN 2004-80029068	20040731 <--
JP 2007502605	T	20070215	JP 2006-523556	20040731 <--
NO 2006000720	A	20060427	NO 2006-720	20060214 <--
US 2006194274	Al	20060831	US 2006-569022	20060217 <--
PRIORITY APPLN. INFO.:			WO 2003-EP9101	A 20030818 <--
			WO 2003-EP9102	A 20030818 <--
			WO 2003-EP9105	A 20030818 <--
			WO 2003-EP9106	A 20030818 <--
			WO 2003-EP9107	A 20030818 <--
			WO 2003-EP9109	A 20030818 <--
			DE 2004-102004007622A	20040217
			DE 2002-10238978	A 20020820 <--
			DE 2002-10238979	A 20020820 <--
			DE 2002-10238980	A 20020820 <--
			DE 2002-10253112	A 20021113 <--
			DE 2002-10258971	A 20021216 <--
			WO 2003-EP309101	A 20030818 <--
			WO 2003-EP309102	A 20030818 <--
			WO 2003-EP309105	A 20030818 <--
			WO 2003-EP309106	A 20030818 <--
			WO 2003-EP309107	A 20030818 <--
			WO 2003-EP309109	A 20030818 <--
			WO 2004-EP8623	W 20040731

AB The invention relates to a method for producing ketocarotinoids by cultivation of genetically modified organisms that have a modified ketolase activity and modified  $\beta$ -cyclase activity as compared to the wild-type organism. The invention also relates to the genetically modified organisms, to their use as food or feed, and to their use for producing ketocarotenoid exts. Thus, transgenic tomato and marigold plants expressing *Nostoc punctiforme* ketolase cDNA were created.

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Basf Ag	2004			DE 10300649 A	HCAPLUS
Cargill Inc	2002			WO 02079395 A	HCAPLUS
Kirin, B	1996			EP 0725137 A	HCAPLUS
Krubasik, P	2000	28	806	BIOCHEMICAL SOCIETY	HCAPLUS
Ronen, G	2000	97	11102	PROCEEDINGS OF THE N	HCAPLUS
Sungene Gmbh & Co Kgaa	2004			DE 10238980 A	HCAPLUS
Sungene Gmbh & Co Kgaa	2004			DE 10253112 A	HCAPLUS
Sungene Gmbh & Co Kgaa	2004			DE 10258971 A	HCAPLUS

L86 ANSWER 2 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 2005:182839 HCAPLUS Full-text

DOCUMENT NUMBER: 142:276001

TITLE: Novel ketolases and the genes encoding them and their use in the manufacture of carotenoids with transgenic organisms

INVENTOR(S): **Sauer, Matt; Schopfer, Christel**  
**Renate; Flachmann, Ralf; Herbers,**  
**Karin; Kunze, Irene; Klebsattel, Martin;**  
**Luck, Thomas; Voeste, Dirk;**  
**Pfeiffer, Angelika-Maria; Tschoep, Hendrik**

PATENT ASSIGNEE(S): Sungene GmbH & Co. Kgaa, Germany

SOURCE: PCT Int. Appl., 317 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 14

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005019461	A2	20050303	WO 2004-EP8625	20040731 <--
WO 2005019461	A3	20050616		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
WO 2004018688	A1	20040304	WO 2003-EP309101	20030818 <--
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RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
WO 2004018693	A2	20040304	WO 2003-EP309102	20030818 <--
WO 2004018693	A3	20041209		
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WO 2004018385	A3	20041021		
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WO 2004018695 A3 20041014  
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DE 102004007624 A1 20050915 DE 2004-102004007624 20040217  
EP 1658372 A2 20060524 EP 2004-763696 20040731 <--  
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PRIORITY APPLN. INFO.:  
WO 2003-EP9101 A 20030818 <--  
WO 2003-EP9102 A 20030818 <--  
WO 2003-EP9105 A 20030818 <--  
WO 2003-EP9106 A 20030818 <--  
WO 2003-EP9107 A 20030818 <--  
WO 2003-EP9109 A 20030818 <--  
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DE 2002-10238980 A 20020820 <--  
DE 2002-10253112 A 20021113 <--  
DE 2002-10258971 A 20021216 <--  
WO 2003-EP309101 A 20030818 <--  
WO 2003-EP309102 A 20030818 <--  
WO 2003-EP309105 A 20030818 <--  
WO 2003-EP309106 A 20030818 <--  
WO 2003-EP309107 A 20030818 <--  
WO 2003-EP309109 A 20030818 <--  
WO 2004-EP8625 W 20040731

AB The invention relates to a method for producing ketocarotenoids in flowers by cultivation of genetically modified, non-human organisms expressing a foreign ketolase gene. Novel ketolases that play a key role in carotenoid biosynthesis are identified in algae and cyanobacteria. Expression of these genes, in combination with genes for other enzymes of the carotenoid biosynthetic pathway may be used to improve the flux through the pathway and overall yield of carotenoids. The invention also relates to the genetically modified organisms, their use as food stuff and feeding stuff and to their use

for producing ketocarotenoid exts. and to novel ketolases and nucleic acids encoding said ketolases.

L86 ANSWER 3 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 3  
 ACCESSION NUMBER: 2005:182838 HCAPLUS Full-text  
 DOCUMENT NUMBER: 142:275078  
 TITLE: Non-native promoters for the tissue-specific  
 expression of foreign genes in *Tagetes*  
 INVENTOR(S): *Sauer, Matt; Schopfer, Christel*  
*Renate; Flachmann, Ralf; Herbers,*  
*Karin; Kunze, Irene; Klebsattel, Martin;*  
*Luck, Thomas; Voeste, Dirk;*  
*Pfeiffer, Angelika-Maria*  
 PATENT ASSIGNEE(S): Sungene G.m.b.H. & Co. K.-G.a.A., Germany  
 SOURCE: PCT Int. Appl., 253 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 14  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005019460	A2	20050303	WO 2004-EP8624	20040731 <--
WO 2005019460	A3	20050721		
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RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
WO 2004018688	A1	20040304	WO 2003-EP309101	20030818 <--
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WO 2004018385	A2	20040304	WO 2003-EP309105	20030818 <--
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WO 2004017749	A2	20040304	WO 2003-EP309109	20030818 <--
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DE 102004007623	A1	20050825	DE 2004-102004007623	20040217
EP 1658371	A2	20060524	EP 2004-763695	20040731 <--
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US 2006162020	A1	20060720	US 2006-568741	20060217 <--
PRIORITY APPLN. INFO.:			WO 2003-EP9101	A 20030818 <--
			WO 2003-EP9102	A 20030818 <--
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			WO 2003-EP9107	A 20030818 <--
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DE 2002-10238978 A 20020820 <--  
 DE 2002-10238979 A 20020820 <--  
 DE 2002-10238980 A 20020820 <--  
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 DE 2002-10258971 A 20021216 <--  
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 WO 2003-EP309107 A 20030818 <--  
 WO 2003-EP309109 A 20030818 <--  
 WO 2004-EP8624 W 20040731

AB Promoters from plants other than members of the genus **Tagetes** are identified as useful for the flower-specific expression of foreign genes in **Tagetes**. In particular, flower-specific expression is used for the manufacture of carotenoids and related products. Promoters from the EPSP synthase gene of Petunia; the lycopene- $\beta$ -cyclase gene of tomato; the phytoene desaturase gene of tomato, and the chromoplast-associated protein of Cucumis sativa are identified as useful. Construction of expression vectors for **Tagetes** using these promoters to drive expression of genes for ketolases are described. Methods of transforming **Tagetes** using Agrobacterium tumefaciens are and anal. of flowers for carotenoid content are also described.

L86 ANSWER 4 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 4

ACCESSION NUMBER: 2004:270115 HCAPLUS Full-text

DOCUMENT NUMBER: 140:282487

TITLE: Promoters specific for the non-reproductive flower tissues of plants and their use in tissue-specific expression of foreign genes

INVENTOR(S): **Klebsattel, Martin**; Keetman, Ulrich;  
 Herbers, Karin; **Flachmann, Ralf**; **Sauer, Matt**; Hillebrand, Heike

PATENT ASSIGNEE(S): Sungene G.m.b.H. & Co. K.-G.a.A., Germany

SOURCE: PCT Int. Appl., 91 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004027070	A2	20040401	WO 2003-EP9594	20030829 <--
WO 2004027070	A3	20040701		
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CA 2497635	A1	20040401	CA 2003-2497635	20030829 <--
AU 2003255497	A1	20040408	AU 2003-255497	20030829 <--
EP 1537218	A2	20050608	EP 2003-797257	20030829 <--
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US 2006168695 A1 20060727 US 2005-526411 20050302 <--  
 PRIORITY APPLN. INFO.: DE 2002-10241124 A 20020903 <--  
 WO 2003-EP9594 W 20030829 <--

AB The invention relates to methods for the specific, transgenic expression of nucleic acid sequences in non-reproductive flower tissues of plants, and expression cassettes and expression vectors containing promoters which have an expression specificity for non-productive tissues of the flower. The invention also relates to organisms (preferably plants), cultures, parts, or reproduction material derived therefrom, which are transformed by means of said transgenic expression cassettes or expression vectors, and the use thereof for producing food, fodder, seed, pharmaceuticals, or fine chems.

L86 ANSWER 5 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 5

ACCESSION NUMBER: 2004:220475 HCAPLUS Full-text  
 DOCUMENT NUMBER: 140:252403  
 TITLE: Enzymic hydrolysis of carotenoids esters  
 INVENTOR(S): **Flachmann, Ralf; Schopfer, Christel**  
**; Sauer, Matt; Klebsattel, Martin**  
 PATENT ASSIGNEE(S): Sungene GmbH & Co. Kgaa, Germany  
 SOURCE: PCT Int. Appl., 27 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 14  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004022765	A2	20040318	WO 2003-EP9218	20030820 <--
WO 2004022765	A3	20041028		
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RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
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CA 2495779	A1	20040318	CA 2003-2495779	20030820 <--
AU 2003287944	A1	20040329	AU 2003-287944	20030820 <--
EP 1532263	A2	20050525	EP 2003-779784	20030820 <--
EP 1532263	B1	20061011		
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			DE 2002-10258971	A 20021216 <--
			WO 2003-EP9218	W 20030820 <--

AB The invention relates to a method for hydrolyzing enzymic carotenoids esters and the use of said carotenoids and the products thereof as human and animal food. Thus, carotenoid esters from *Haemotococcus pluvialis*, *Tagetes*, *erecta*, *Adonis aestivalis*, and *Capsicum annum* (paprika) were extracted with acetone and hydrolyzed with lipase.

L86 ANSWER 6 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 6  
 ACCESSION NUMBER: 2004:183043 HCAPLUS Full-text  
 DOCUMENT NUMBER: 140:252399  
 TITLE: Method for producing ketocarotenoids in fruit of  
 ketolase overexpressing transgenic plants  
 INVENTOR(S): **Schopfer, Christel Renate; Flachmann,  
 Ralf;** Herbers, Karin; Kunze, Irene; **Sauer,  
 Matt; Klebsattel, Martin**  
 PATENT ASSIGNEE(S): Sungene G.m.b.H. & Co. K.-G.a.A., Germany  
 SOURCE: PCT Int. Appl., 224 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 14  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004018695	A2	20040304	WO 2003-EP9107	20030818 <--
WO 2004018695	A3	20041014		
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WO 2005019461 A2 20050303 WO 2004-EP8625 20040731 <--

WO 2005019461 A3 20050616

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EP 1658371 A2 20060524 EP 2004-763695 20040731 <--

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EP 1658372 A2 20060524 EP 2004-763696 20040731 <--

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JP 2007502605 T 20070215 JP 2006-523556 20040731 <--

NO 2005000755 A 20050519 NO 2005-755 20050211 <--

NO 2006000720 A 20060427 NO 2006-720 20060214 <--

US 2006162020 A1 20060720 US 2006-568741 20060217 <--

US 2006194274 A1 20060831 US 2006-569022 20060217 <--

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 DE 2002-10253112 A 20021113 <--  
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 DE 2004-102004007624A 20040217  
 WO 2004-EP8623 W 20040731  
 WO 2004-EP8624 W 20040731  
 WO 2004-EP8625 W 20040731

AB The invention relates to a method for producing ketocarotenoids by cultivating genetically modified plants which exhibit a ketolase activity in the fruit thereof. Thus, transgenic tomato plants expressing the Haematococcus pluvialis ketolase gene from the AP3 promoter of Arabidopsis thaliana were prepared. The carotenoid levels in control vs. transgenic plants (expressed as percent of total carotenoids) were lycopene (80.5 vs. 84),  $\beta$ -carotene (14.4 vs. 9.4), lutein (2.8 vs. 0.3), canthaxanthin (0 vs 0.5), adonirubin (0 vs. 0.2), **astaxanthin** (0 vs. 5.0) and zeaxanthin (0.2 vs. 0.3).

L86 ANSWER 7 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 7

ACCESSION NUMBER: 2004:183042 HCAPLUS Full-text

DOCUMENT NUMBER: 140:252398

TITLE: Method for producing ketocarotinoids in ketolase-overexpressing transgenic microorganisms and plants

INVENTOR(S): **Sauer, Matt; Flachmann, Ralf; Klebsattel, Martin; Schopfer, Christel Renate**

PATENT ASSIGNEE(S): Sungene G.m.b.H. & Co. K.-G.a.A., Germany

SOURCE: PCT Int. Appl., 191 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 14

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2004018694	A3	20040910		
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CA 2495878	A1	20040304	CA 2003-2495878	20030818 <--
AU 2003260424	A1	20040311	AU 2003-260424	20030818 <--
EP 1532265	A2	20050525	EP 2003-792348	20030818 <--
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WO 2005019467	A1	20050303	WO 2004-EP8623	20040731 <--
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WO 2005019461 A2 20050303 WO 2004-EP8625 20040731 <--

WO 2005019461 A3 20050616

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EP 1658377 A1 20060524 EP 2004-741347 20040731 <--

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EP 1658371 A2 20060524 EP 2004-763695 20040731 <--

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EP 1658372 A2 20060524 EP 2004-763696 20040731 <--

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 WO 2004-EP8623 W 20040731  
 WO 2004-EP8624 W 20040731  
 WO 2004-EP8625 W 20040731

AB The invention relates to a method for producing ketocarotinoids by cultivating genetically modified microorganisms or plants having a modified ketolase activity compared to the wild type, to genetically modified organisms, and to the use thereof as foodstuffs and fodder and for producing ketocarotinoid exts. Thus, *E. coli* was transformed with two plasmids, pNOSTF-G and pMCL-CrtYIBZ/idi/gps. Plasmid pNOSTF-G contains the ketolase gene of *Nostoc* sp. PCC 7120 in com. plasmid pGEM-T. Plasmid pMCL-CrtYIBZ/idi/gps contains the crtY, crtI, crtB, and crtZ genes of *Erwinia uredovora*, the gps gene of *Archaeoglobus fulgidus*, and the idi gene of *E. coli*. The *E. coli* transformant produced **astaxanthin**, adonirubin, and canthaxanthin in ratios of 1:0.38:0.25, resp.

L86 ANSWER 8 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 8

ACCESSION NUMBER: 2004:183041 HCAPLUS Full-text

DOCUMENT NUMBER: 140:234476

TITLE: Transgenic plants with enhanced ketolase activity for use in production of ketocarotenoids in flower petals

INVENTOR(S): **Schopfer, Christel Renate; Flachmann, Ralf;** Herbers, Karin; Kunze, Irene; **Sauer, Matt; Klebsattel, Martin**

PATENT ASSIGNEE(S): Sungene G.m.b.H. & Co. K.-G.a.A., Germany

SOURCE: PCT Int. Appl., 497 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 14

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2004018693	A3	20041209		
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EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,  
SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,  
SN, TD, TG

WO 2005019461 A2 20050303 WO 2004-EP8625 20040731 <--  
WO 2005019461 A3 20050616  
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,  
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LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,  
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SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,  
SN, TD, TG

EP 1658377 A1 20060524 EP 2004-741347 20040731 <--  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

EP 1658371 A2 20060524 EP 2004-763695 20040731 <--  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
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EP 1658372 A2 20060524 EP 2004-763696 20040731 <--  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

CN 1863922 A 20061115 CN 2004-80029068 20040731 <--  
JP 2007502605 T 20070215 JP 2006-523556 20040731 <--  
NO 2005000705 A 20050518 NO 2005-705 20050209 <--  
US 2006031963 A1 20060209 US 2005-524972 20050218 <--  
NO 2006000720 A 20060427 NO 2006-720 20060214 <--  
US 2006162020 A1 20060720 US 2006-568741 20060217 <--  
US 2006194274 A1 20060831 US 2006-569022 20060217 <--  
PRIORITY APPLN. INFO.: DE 2002-10238978 A 20020820 <--

DE 2002-10238979 A 20020820 <--  
 DE 2002-10238980 A 20020820 <--  
 DE 2002-10253112 A 20021113 <--  
 DE 2002-10258971 A 20021216 <--  
 WO 2003-EP309101 A 20030818 <--  
 WO 2003-EP309102 A 20030818 <--  
 WO 2003-EP309105 A 20030818 <--  
 WO 2003-EP309106 A 20030818 <--  
 WO 2003-EP309107 A 20030818 <--  
 WO 2003-EP309109 A 20030818 <--  
 WO 2003-EP9101 A 20030818 <--  
 WO 2003-EP9102 W 20030818 <--  
 WO 2003-EP9105 A 20030818 <--  
 WO 2003-EP9106 A 20030818 <--  
 WO 2003-EP9107 A 20030818 <--  
 WO 2003-EP9109 A 20030818 <--  
 DE 2004-102004007622A 20040217  
 DE 2004-102004007623A 20040217  
 DE 2004-102004007624A 20040217  
 WO 2004-EP8623 W 20040731  
 WO 2004-EP8624 W 20040731  
 WO 2004-EP8625 W 20040731

AB The invention relates to a method for the production of ketocarotenoids by means of the cultivation of plants, which have an altered ketolase activity in flower petals in comparison to the wild type, the genetically altered plants and the use thereof as human and animal foodstuffs and for the production of ketocarotenoid exts. Thus, the flower petals of transgenic tomato expressing the *Haematococcus pluvialis* ketolase gene from the flower-specific AP3 promoter of *A. thaliana* were examined for ketocarotenoid content. While control plants produced primarily violaxanthin, the transgenic plants produced mainly **astaxanthin** (61% of total carotenoids) with some adonirubin (15%), adonixanthin (4%), and  $\beta/\zeta$ -carotene (15%), and no violaxanthin. Similar results were observed with transgenic **Tagetes erecta**.

L86 ANSWER 9 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 9

ACCESSION NUMBER: 2004:182813 HCAPLUS Full-text

DOCUMENT NUMBER: 140:250273

TITLE: Increasing the carotenoid content of plants by inhibiting expression of the  $\epsilon$ -cyclase gene by RNA interference

INVENTOR(S): **Schopfer, Christel Renate; Flachmann, Ralf**; Herbers, Karin; Kunze, Irene; **Sauer, Matt; Klebsattel, Martin**

PATENT ASSIGNEE(S): Sungene G.m.b.H. & Co. K.-G.-a.A., Germany

SOURCE: PCT Int. Appl., 79 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 14

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004018385	A2	20040304	WO 2003-EP9105	20030818 <--
WO 2004018385	A3	20041021		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,			

PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,  
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DE 10238979 A1 20040226 DE 2002-10238979 20020820 <--  
 DE 10238978 A1 20040304 DE 2002-10238978 20020820 <--  
 DE 10238980 A1 20040304 DE 2002-10238980 20020820 <--  
 DE 10253112 A1 20040603 DE 2002-10253112 20021113 <--  
 DE 10258971 A1 20040701 DE 2002-10258971 20021216 <--  
 CA 2496207 A1 20040304 CA 2003-2496207 20030818 <--  
 AU 2003260423 A1 20040311 AU 2003-260423 20030818 <--  
 EP 1542945 A2 20050622 EP 2003-792347 20030818 <--

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CN 1675367 A 20050928 CN 2003-819751 20030818 <--  
 AU 2004267196 A1 20050303 AU 2004-267196 20040731 <--  
 CA 2535972 A1 20050303 CA 2004-2535972 20040731 <--  
 WO 2005019467 A1 20050303 WO 2004-EP8623 20040731 <--

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 SN, TD, TG

WO 2005019460 A2 20050303 WO 2004-EP8624 20040731 <--  
 WO 2005019460 A3 20050721

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 SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,  
 SN, TD, TG

WO 2005019461 A2 20050303 WO 2004-EP8625 20040731 <--  
 WO 2005019461 A3 20050616

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,  
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 NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,  
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 SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,  
 SN, TD, TG

EP 1658377 A1 20060524 EP 2004-741347 20040731 <--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

EP 1658371	A2	20060524	EP 2004-763695	20040731 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
EP 1658372	A2	20060524	EP 2004-763696	20040731 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
CN 1863922	A	20061115	CN 2004-80029068	20040731 <--
JP 2007502605	T	20070215	JP 2006-523556	20040731 <--
NO 2005000598	A	20050407	NO 2005-598	20050203 <--
US 2006253927	A1	20061109	US 2005-524652	20050328 <--
NO 2006000720	A	20060427	NO 2006-720	20060214 <--
US 2006162020	A1	20060720	US 2006-568741	20060217 <--
US 2006194274	A1	20060831	US 2006-569022	20060217 <--
PRIORITY APPLN. INFO.:			DE 2002-10238978	A 20020820 <--
			DE 2002-10238979	A 20020820 <--
			DE 2002-10238980	A 20020820 <--
			DE 2002-10253112	A 20021113 <--
			DE 2002-10258971	A 20021216 <--
			WO 2003-EP309101	A 20030818 <--
			WO 2003-EP309102	A 20030818 <--
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			WO 2003-EP309106	A 20030818 <--
			WO 2003-EP309107	A 20030818 <--
			WO 2003-EP309109	A 20030818 <--
			WO 2003-EP9101	A 20030818 <--
			WO 2003-EP9102	A 20030818 <--
			WO 2003-EP9105	W 20030818 <--
			WO 2003-EP9106	A 20030818 <--
			WO 2003-EP9107	A 20030818 <--
			WO 2003-EP9109	A 20030818 <--
			DE 2004-102004007622A	20040217
			DE 2004-102004007623A	20040217
			DE 2004-102004007624A	20040217
			WO 2004-EP8623	W 20040731
			WO 2004-EP8624	W 20040731
			WO 2004-EP8625	W 20040731

AB A method of increasing the carotenoid content of flowers by inhibiting expression of the gene for lycopene  $\epsilon$ -cyclase with interfering RNA is described. The inhibition of the enzyme increases the yield of zeaxanthin and its metabolites. Use of an siRNA to lycopene  $\epsilon$ -cyclase to alter flower carotenoid composition in *Tagetes erecta* is demonstrated.

L86 ANSWER 10 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 10

ACCESSION NUMBER: 2002:446075 HCAPLUS Full-text

DOCUMENT NUMBER: 137:24324

TITLE: Procedure for the preparation of solid formulations of water-soluble, sparingly water-soluble or water-insoluble active substances

INVENTOR(S): Auweter, Helmut; Bohn, Heribert; Lueddecke, Erik; Hinz, Willy; Runge, Frank; **Pfeiffer, Angelika-Maria**

PATENT ASSIGNEE(S): Basf Aktiengesellschaft, Germany

SOURCE: Eur. Pat. Appl., 27 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1213013	A2	20020612	EP 2001-126756	20011109 <--
EP 1213013	A3	20040102		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
DE 10129713	A1	20030109	DE 2001-10129713	20010622 <--
PRIORITY APPLN. INFO.:			DE 2000-10059231	A 20001129 <--
			DE 2001-10129713	A 20010622 <--

AB The invention concerns a procedure for the preparation of solid formulations for the food industry and animal **feeds** or for pharmaceutical and cosmetic applications. The formulations of water-insol. or water-soluble active substances are prepared by dispersing the substances in oily suspensions. **Astaxanthin** (45 g) was suspended in a iso-PrOH-water mixture and the drug was dissolved by heating the mixture to 169° under 60 bar pressure. The above solution was mixed with sodium caseinate. The drug had a particle size of 100 nm.

L86 ANSWER 11 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 11

ACCESSION NUMBER: 2002:571476 HCAPLUS Full-text

DOCUMENT NUMBER: 137:93043

TITLE: Carotenoid powder produced by using soybean protein as protective colloid

INVENTOR(S): Runge, Frank; Lueddecke, Erik; **Pfeiffer, Angelika-Maria**

PATENT ASSIGNEE(S): BASF A.-G., Germany

SOURCE: Ger. Offen., 8 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10104494	A1	20020801	DE 2001-10104494	20010131 <--
EP 1228705	A2	20020807	EP 2002-1308	20020118 <--
EP 1228705	A3	20031001		
EP 1228705	B1	20060802		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
AT 334603	T	20060815	AT 2002-1308	20020118 <--
US 2002128325	A1	20020912	US 2002-58022	20020129 <--
US 7070812	B2	20060704		
JP 2002327133	A	20021115	JP 2002-19943	20020129 <--
JP 3694268	B2	20050914		
CN 1374035	A	20021016	CN 2002-102590	20020131 <--
PRIORITY APPLN. INFO.:			DE 2001-10104494	A 20010131 <--

AB Carotenoid powders are produced by (a) dispersing one or several carotenoids in a mol.-disperse or colloid-disperse solution of a mixture of lactose and a protective colloid and (b) removal of water to form a dry powder. The protective colloid of step (a) includes soybean protein. Thus, canthaxanthin is suspended in an azeotropic isopropanol-water mixture to which ascorbyl palmitate and  $\alpha$ -tocopherol are added; an aqueous phase containing soybean protein (7% degree of hydrolysis) and lactose is mixed in. Canthaxanthin powder is obtained by using a thin-film evaporator.

L86 ANSWER 12 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 12

ACCESSION NUMBER: 2002:484667 HCAPLUS Full-text  
 DOCUMENT NUMBER: 137:46457  
 TITLE: Preparation of dry powders of oxygenated carotenoids  
 INVENTOR(S): Runge, Frank; Lueddecke, Erik; Auweter, Helmut;  
**Pfeiffer, Angelika-Maria**; Hinz, Willy  
 PATENT ASSIGNEE(S): BASF A.-G., Germany  
 SOURCE: Ger. Offen., 8 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10064387	A1	20020627	DE 2000-10064387	20001221 <--
EP 1219292	A1	20020703	EP 2001-128813	20011204 <--
EP 1219292	B1	20041006		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
AT 278392	T	20041015	AT 2001-128813	20011204 <--
PT 1219292	T	20050131	PT 2001-128813	20011204 <--
ES 2228737	T3	20050416	ES 2001-1128813	20011204 <--
JP 2002262824	A	20020917	JP 2001-383736	20011217 <--
JP 3595300	B2	20041202		
US 2002165285	A1	20021107	US 2001-15560	20011217 <--
US 6639113	B2	20031028		
CN 1362406	A	20020807	CN 2001-145432	20011221 <--
PRIORITY APPLN. INFO.:			DE 2000-10064387	A 20001221 <--

AB Dry powders of oxygenated carotenoids are prepared by dispersing the carotenoids in an aqueous or colloidal solution of a protective colloid and thereafter removing water and solvents to form a dry powder. The protective colloid includes partially hydrolyzed (>5%) soybean protein. Thus, a canthaxanthin dry powder is produced from an azeotropic isopropanol-water mixture by using 7% hydrolyzed soybean protein as a protective agent.

L86 ANSWER 13 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 13

ACCESSION NUMBER: 2002:583741 HCAPLUS Full-text  
 DOCUMENT NUMBER: 138:13746  
 TITLE: Pigmenting efficacy of **astaxanthin** and canthaxanthin in fresh-water reared Atlantic salmon, *Salmo salar*  
 AUTHOR(S): Baker, R. T. M.; **Pfeiffer, A.-M.**; Schoner, F.-J.; Smith-Lemmon, L.  
 CORPORATE SOURCE: Global Marketing Cartenoids, BASF Aktiengesellschaft, Ludwigshafen, 67056, Germany  
 SOURCE: Animal Feed Science and Technology (2002), 99(1-4), 97-106  
 CODEN: AFSTDH; ISSN: 0377-8401  
 PUBLISHER: Elsevier Science B.V.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB A 25-wk **feeding** trial was performed to evaluate the efficacy of **astaxanthin** vs. canthaxanthin, at mixed, graded levels in diets of freshwater reared Atlantic salmon, growing from an initial body weight of 408 g to a final weight of 1.2 kg. Five dietary pigment ratios were tested in five replicates. Dietary treatments were set-up to provide pigment ratios ranging from 1.00 of pigment from **astaxanthin** (45 mg/kg **feed**), to 1.00 from canthaxanthin (72 mg/kg **feed**). Growth and **feed** utilization parameters were unaffected by dietary

treatment ( $P > 0.05$ ). In contrast to work on rainbow trout, there was no difference in the flesh pigment deposition of **astaxanthin** or canthaxanthin ( $P > 0.05$ ) in Atlantic salmon. Flesh deposition was linearly related to **feed** dose for both carotenoids, indicating that even at 70 mg/kg, canthaxanthin deposition had not reached a plateau in the fish under test. This could support the practice of **feeding** of levels of carotenoid at around 70 mg/kg in early grow-out phases of salmon since a significant incremental flesh response was observed ( $P < 0.05$ ). Linearity of the dose/ deposition relationship indicated that **feed astaxanthin** and canthaxanthin did not interact. Despite the relatively low flesh pigment levels attained, raw fillet color was seen to be close to color targets adopted for harvest-size fish.

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
AOAC	1995			Official Methods of	
Buttle, L	2001	32	103	Aquaculture Res	HCAPLUS
Buttle, L	2001	24	18	Fish Farmer	
Choubert, G	1996	45	445	Ann Zootechnol	HCAPLUS
Choubert, G	1989	81	69	Aquaculture	HCAPLUS
Gormley, T	1992	32	199	Irish J Agric Food R	
Johnston, I	2000	189	335	Aquaculture	
March, B	1996	58	178	Progress Fish Cultur	
No, H	1992	101	123	Aquaculture	HCAPLUS
Refsgaard, H	1998	46	808	J Agric Food Chem	HCAPLUS
Shahidi, F	1998	38	1	Crit rev Food Sci	HCAPLUS
Sheehen, E	1998	63	313	Food Chem	
Storebakken, T	1987	65	279	Aquaculture	HCAPLUS
Storebakken, T	1992	100	209	Aquaculture	HCAPLUS
Torrissen, O	1986	53	271	Aquaculture	HCAPLUS
Torrissen, O	1989	79	363	Aquaculture	HCAPLUS
Torrissen, O	1990	88	351	Aquaculture	HCAPLUS
Torrissen, O	1989	1	209	Rev Aquat Sci	HCAPLUS

L86 ANSWER 14 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 14

ACCESSION NUMBER: 1998:353084 HCAPLUS Full-text

DOCUMENT NUMBER: 129:27303

TITLE: Oil-miscible carotenoid preparation

INVENTOR(S): Lueddecke, Erik; **Pfeiffer, Angelika-Maria**;  
Meyer, Joachim

PATENT ASSIGNEE(S): BASF A.-G., Germany

SOURCE: Ger. Offen., 4 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19649062	A1	19980528	DE 1996-19649062	19961127 <--
EP 845503	A2	19980603	EP 1997-119150	19971103 <--
EP 845503	A3	19990519		
EP 845503	B1	20010606		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
ES 2158426	T3	20010901	ES 1997-119150	19971103 <--
PT 845503	T	20011031	PT 1997-119150	19971103 <--
TW 529915	B	20030501	TW 1997-86116717	19971110 <--
US 5863953	A	19990126	US 1997-972392	19971118 <--

JP 10168333 A 19980623 JP 1997-322938 19971125 <--  
 NO 9705441 A 19980528 NO 1997-5441 19971126 <--  
 NO 308173 B1 20000807  
 CN 1185433 A 19980624 CN 1997-122957 19971126 <--  
 CN 1104234 B 20030402  
 GR 3035945 T3 20010831 GR 2001-400801 20010528 <--  
 PRIORITY APPLN. INFO.: DE 1996-19649062 A 19961127 <--  
 AB A carotenoid preparation consists of a carotenoid aqueous dispersion (particle size <100 µm) incorporated in a water-in-oil emulsion for food, **feed**, cosmetic, and pharmaceutical uses. Thus, an **astaxanthin** dispersion may be emulsified with a mixture of soybean oil and polyglycerol polyricinoleate.

L86 ANSWER 15 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:270114 HCAPLUS Full-text  
 DOCUMENT NUMBER: 140:282486  
 TITLE: Flower-specific promoters from lycopene  
 ε-cyclase genes and their in flower-specific  
 expression of foreign genes  
 INVENTOR(S): **Schopfer, Christel Renate; Sauer,  
 Matt; Klebsattel, Martin;  
 Flachmann, Ralf**  
 PATENT ASSIGNEE(S): Sungene G.m.b.H. & Co. K.-G.a.A., Germany  
 SOURCE: PCT Int. Appl., 187 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 14  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004027069	A1	20040401	WO 2003-EP8394	20030730 <--
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CA 2496300	A1	20040401	CA 2003-2496300	20030730 <--
AU 2003250193	A1	20040408	AU 2003-250193	20030730 <--
EP 1554388	A1	20050720	EP 2003-793448	20030730 <--
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US 2006107352	A1	20060518	US 2005-524648	20050914 <--
PRIORITY APPLN. INFO.: DE 2002-10238979 A 20020820 <--				
DE 2002-10247599 A 20021011 <--				
WO 2003-EP8394 W 20030730 <--				

AB Blossom-specific promoters from lycopene ε-cyclase genes are described for use in tissue-specific expression of foreign genes in transgenic plants. The invention further relates to organisms modified with said transgenic expression cassettes or expression vectors (preferably plants), cultures derived therefrom, parts or propagation material and the use of the above for



the production of human and animal feedstuffs, seed stock, pharmaceuticals or fine chems.

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Cunningham, F	2001	98	2905	PROCEEDINGS OF THE N	HCAPLUS
Guiliano, G	2000			No publication given	
Hansens Lab	2000			WO 0032788 A	HCAPLUS
Nakamura, Y	1999			No publication given	
Ronen	1999	17	341	PLANT JOURNAL	HCAPLUS
Sandmann, G	2002	116	431	PHYSIOLOGIA PLANTARU	HCAPLUS

L86 ANSWER 16 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:183037 HCAPLUS Full-text

DOCUMENT NUMBER: 140:252397

TITLE: Method for production of  $\beta$ -carotenoids with  
transgenic plants overexpressing lycopene  
 $\beta$ -cyclase and carotene  $\beta$ -hydroxylase

INVENTOR(S): **Klebsattel, Martin; Sauer, Matt;  
Flachmann, Ralf; Schopfer, Christel  
Renate**

PATENT ASSIGNEE(S): Sungene G.m.b.H. & Co. K.-G.a.A., Germany

SOURCE: PCT Int. Appl., 154 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 14

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004018688	A1	20040304	WO 2003-EP9101	20030818 <--
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AU 2003258622	A1	20040311	AU 2003-258622	20030818 <--
EP 1532256	A1	20050525	EP 2003-792344	20030818 <--
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AU 2004267196	A1	20050303	AU 2004-267196	20040731 <--
CA 2535972	A1	20050303	CA 2004-2535972	20040731 <--
WO 2005019467	A1	20050303	WO 2004-EP8623	20040731 <--
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WO 2005019460 A2 20050303 WO 2004-EP8624 20040731 <--  
 WO 2005019460 A3 20050721

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WO 2005019461 A2 20050303 WO 2004-EP8625 20040731 <--  
 WO 2005019461 A3 20050616

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EP 1658377 A1 20060524 EP 2004-741347 20040731 <--  
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EP 1658371 A2 20060524 EP 2004-763695 20040731 <--  
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EP 1658372 A2 20060524 EP 2004-763696 20040731 <--  
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CN 1863922 A 20061115 CN 2004-80029068 20040731 <--

JP 2007502605 T 20070215 JP 2006-523556 20040731 <--

NO 2005000600 A 20050418 NO 2005-600 20050203 <--

US 2006059584 A1 20060316 US 2005-524971 20050218 <--

NO 2006000720 A 20060427 NO 2006-720 20060214 <--

US 2006162020 A1 20060720 US 2006-568741 20060217 <--

US 2006194274 A1 20060831 US 2006-569022 20060217 <--

PRIORITY APPLN. INFO.:

DE 2002-10238979 A 20020820 <--

DE 2002-10238980 A 20020820 <--

DE 2002-10258971 A 20021216 <--

WO 2003-EP309101 A 20030818 <--

WO 2003-EP309102 A 20030818 <--

WO 2003-EP309105 A 20030818 <--

WO 2003-EP309106 A 20030818 <--

WO 2003-EP309107 A 20030818 <--

WO 2003-EP309109 A 20030818 <--

WO 2003-EP9101 W 20030818 <--

WO 2003-EP9102 A 20030818 <--

WO 2003-EP9105 A 20030818 <--

WO 2003-EP9106 A 20030818 <--

WO 2003-EP9107 A 20030818 <--

WO 2003-EP9109 A 20030818 <--  
 DE 2004-102004007622A 20040217  
 DE 2004-102004007623A 20040217  
 DE 2004-102004007624A 20040217  
 WO 2004-EP8623 W 20040731  
 WO 2004-EP8624 W 20040731  
 WO 2004-EP8625 W 20040731

AB The invention relates to a method for the production of  $\beta$ -carotenoids by the cultivation of genetically-modified plants, and the use thereof as human and animal foodstuffs and for the production of  $\beta$ -carotenoid exts. Thus, transgenic plants overexpressing lycopene  $\beta$ -cyclase in plant tissue with nonphotosynthetic plastids (e.g., fruits, tubers, flowers), overexpressing an exogenous carotene  $\beta$ -hydroxylase, and addnl. exhibiting reduced endogenous carotene  $\beta$ -hydroxylase and lycopene  $\beta$ -cyclase activities may be used to produce  $\beta$ -carotenoids. In these plants the  $\beta$ -carotenoid levels are increased and the  $\alpha$ -carotenoid levels are decreased.

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Dharmapuri, S	2002	519	30	FEBS LETTERS	HCAPLUS
Enea Ente Nuove Tec	2003			EP 1323825 A	HCAPLUS
Hansens Lab	2000			WO 0032788 A	HCAPLUS
Monsanto Technology Llc	2001			WO 0188169 A	HCAPLUS

L86 ANSWER 17 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:182633 HCAPLUS Full-text

DOCUMENT NUMBER: 140:234841

TITLE: Use of **astaxanthin**-containing plants or parts of plants of the genus *Tagetes* as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.

INVENTOR(S): **Flachmann, Ralf; Sauer, Matt; Schopfer, Christel Renate; Klebsattel, Martin; Pfeiffer, Angelika-Maria; Luck, Thomas; Voeste, Dirk**

PATENT ASSIGNEE(S): Sungene G.m.b.H. & Co. K.-G.a.A., Germany; BASF Aktiengesellschaft; BASF Plant Science G.m.b.H.

SOURCE: PCT Int. Appl., 391 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 14

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004017749	A2	20040304	WO 2003-EP9109	20030818 <--
WO 2004017749	A3	20041014		
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DE 10253112	A1	20040603	DE 2002-10253112	20021113 <--
DE 10258971	A1	20040701	DE 2002-10258971	20021216 <--
CA 2495235	A1	20040304	CA 2003-2495235	20030818 <--
AU 2003264062	A1	20040311	AU 2003-264062	20030818 <--
EP 1531683	A2	20050525	EP 2003-792350	20030818 <--
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CA 2535972	A1	20050303	CA 2004-2535972	20040731 <--
WO 2005019467	A1	20050303	WO 2004-EP8623	20040731 <--
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WO 2005019460	A2	20050303	WO 2004-EP8624	20040731 <--
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EP 1658377	A1	20060524	EP 2004-741347	20040731 <--
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EP 1658371	A2	20060524	EP 2004-763695	20040731 <--
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JP 2007502605	T	20070215	JP 2006-523556	20040731 <--
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US 2005281909	A1	20051222	US 2005-524647	20050217 <--
NO 2006000720	A	20060427	NO 2006-720	20060214 <--
US 2006162020	A1	20060720	US 2006-568741	20060217 <--
US 2006194274	A1	20060831	US 2006-569022	20060217 <--
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			WO 2003-EP309101	A 20030818 <--
			WO 2003-EP309102	A 20030818 <--
			WO 2003-EP309105	A 20030818 <--
			WO 2003-EP309106	A 20030818 <--
			WO 2003-EP309107	A 20030818 <--
			WO 2003-EP309109	A 20030818 <--
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			WO 2003-EP9109	W 20030818 <--
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			DE 2004-102004007623A	20040217
			DE 2004-102004007624A	20040217
			WO 2004-EP8623	W 20040731
			WO 2004-EP8624	W 20040731
			WO 2004-EP8625	W 20040731

AB The invention relates to the use of **astaxanthin**-containing plants or parts of plants of the genus *Tagetes* or **astaxanthin**-containing exts. of **astaxanthin**-containing plants or parts of plants of the genus *Tagetes* for oral administration to animals. The invention also relates to methods for producing animal **feed** preps., to said animal **feed** preps. themselves, to a method for the pigmentation of animals or animal products, and to a method for producing pigmented animals and animal products, especially aquatic organisms such as trout, salmon and shrimp.

L86 ANSWER 18 OF 20 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2004-554601 [54] WPIX  
 CROSS REFERENCE: 2004-215840; 2004-215841; 2004-215842; 2004-295424;  
 2004-489014; 2005-202657; 2005-202658; 2005-202663  
 DOC. NO. CPI: C2004-203123 [54]  
 DOC. NO. NON-CPI: N2004-438686 [54]  
 TITLE: Use of **astaxanthin**-containing plant material,  
 or extracts, from *Tagetes* for oral administration to  
 animals, particularly for pigmentation of fish,  
 crustacea, birds and their products  
 DERWENT CLASS: B05; C06; D13; D16; E15; E24; P13; P14  
 INVENTOR: **FLACHMANN R; HERBERS K;**  
**KLEBSATTEL M; KUNZE I; LUCK T**  
**; PFEIFFER A; SAUER M; SCHOPFER**  
**C; SCHOPFER C R; VOESTE D**  
 PATENT ASSIGNEE: (BADI-C) BASF AG; (BADI-C) BASF PLANT SCI GMBH; (SUNG-N)  
 SUNGENE GMBH & CO KGAA  
 COUNTRY COUNT: 36

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
DE 10258971	A1	20040701	(200454) *	DE	145[15]	
AU 2003264062	A1	20040311	(200457)	EN		
AU 2003287944	A1	20040329	(200459)	EN		
NO 2005000598	A	20050407	(200534)	NO		
EP 1532256	A1	20050525	(200535)	DE		
EP 1531683	A2	20050525	(200535)	DE		
NO 2005000600	A	20050418	(200535)	NO		
EP 1542945	A2	20050622	(200541)	DE		
US 20050255541	A1	20051117	(200576)	EN		
US 20050281909	A1	20051222	(200603)	EN		
CN 1675367	A	20050928	(200610)	ZH		
US 20060031963	A1	20060209	(200612)	EN		
MX 2005001899	A1	20050901	(200617)	ES		
MX 2005001948	A1	20050901	(200617)	ES		
CN 1688206	A	20051026	(200618)	ZH		
CN 1688711	A	20051026	(200618)	ZH		
CN 1688712	A	20051026	(200618)	ZH		
CN 1688713	A	20051026	(200618)	ZH		
MX 2005001811	A1	20051101	(200625)	ES		
MX 2005001944	A1	20050701	(200628)	ES		
US 20060112451	A1	20060525	(200635)	EN		
EP 1532263	B1	20061011	(200668)	DE		
US 20060253927	A1	20061109	(200674)	EN		
DE 50305376	G	20061123	(200680)	DE		

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 10258971	A1	DE 2002-10258971	20021216
AU 2003264062	A1	AU 2003-264062	20030818
CN 1675367	A	CN 2003-819751	20030818
CN 1688206	A	CN 2003-824205	20030818
CN 1688711	A	CN 2003-824224	20030818
CN 1688712	A	CN 2003-824331	20030818
CN 1688713	A	CN 2003-824350	20030818
EP 1532256	A1	EP 2003-792344	20030818
EP 1542945	A2	EP 2003-792347	20030818
EP 1531683	A2	EP 2003-792350	20030818
NO 2005000598	A	WO 2003-EP9105	20030818
EP 1532256	A1	WO 2003-EP9101	20030818
EP 1531683	A2	WO 2003-EP9109	20030818
NO 2005000600	A	WO 2003-EP9101	20030818
EP 1542945	A2	WO 2003-EP9105	20030818
US 20050281909	A1	WO 2003-EP9109	20030818
US 20060031963	A1	WO 2003-EP9102	20030818
MX 2005001899	A1	WO 2003-EP9106	20030818
MX 2005001948	A1	WO 2003-EP9109	20030818
MX 2005001811	A1	WO 2003-EP9102	20030818
MX 2005001944	A1	WO 2003-EP9107	20030818
US 20060112451	A1	WO 2003-EP9106	20030818
US 20060253927	A1	WO 2003-EP9105	20030818
AU 2003287944	A1	AU 2003-287944	20030820
EP 1532263	B1	EP 2003-779784	20030820
US 20050255541	A1	WO 2003-EP9218	20030820
EP 1532263	B1	WO 2003-EP9218	20030820
NO 2005000598	A	NO 2005-598	20050203
NO 2005000600	A	NO 2005-600	20050203

MX 2005001811 A1  
 MX 2005001899 A1  
 US 20050281909 A1  
 MX 2005001944 A1  
 MX 2005001948 A1  
 US 20060112451 A1  
 US 20060031963 A1  
 US 20060253927 A1  
 US 20050255541 A1  
 DE 50305376 G  
 DE 50305376 G  
 DE 50305376 G

MX 2005-1811 20050215  
 MX 2005-1899 20050217  
 US 2005-524647 20050217  
 MX 2005-1944 20050218  
 MX 2005-1948 20050218  
 US 2005-524827 20050218  
 US 2005-524972 20050218  
 US 2005-524652 20050328  
 US 2005-524990 20050625  
**DE 2003-505376 20030820**  
**EP 2003-779784 20030820**  
**WO 2003-EP9218 20030820**

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2003264062	A1	WO 2004017749 A
EP 1531683	A2	WO 2004017749 A
MX 2005001948	A1	WO 2004017749 A
EP 1542945	A2	WO 2004018385 A
EP 1532256	A1	WO 2004018688 A
MX 2005001811	A1	WO 2004018693 A
MX 2005001899	A1	WO 2004018694 A
MX 2005001944	A1	WO 2004018695 A
AU 2003287944	A1	WO 2004022765 A
EP 1532263	B1	WO 2004022765 A
DE 50305376	G	EP 1532263 A
DE 50305376	G	WO 2004022765 A

PRIORITY APPLN. INFO: **DE 2002-10258971 20021216**  
**DE 2002-10238978 20020820**  
**DE 2002-10238979 20020820**  
**DE 2002-10238980 20020820**  
**DE 2002-10253112 20021113**

AN 2004-554601 [54] WPIX

CR 2004-215840; 2004-215841; 2004-215842; 2004-295424; 2004-489014;  
 2005-202657; 2005-202658; 2005-202663

AB DE 10258971 A1 UPAB: 20060203

NOVELTY - Use of **astaxanthin** (I)-containing plants of the genus *Tagetes* or their parts, or (I)-containing extracts of them, for oral administration to animals.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following: (1) preparation of an animal **feed** composition by mixing standard fodder ingredients with (I)-containing plants of the genus *Tagetes* or their parts, or (I)-containing extracts of them; (2) method for pigmentation of animals, or their products, by oral administration of (I)-containing plants of the genus *Tagetes* or their parts, or (I)-containing extracts of them; and (3) animal **feed** composition or pigmentation agent that contains (I)-containing plants of the genus *Tagetes* or their parts, or (I)-containing extracts of them.

USE - (I)-containing compositions are used particularly for pigmentation of animals, preferably fish, crustacea and birds, or their products (meat, skin, feathers and eggs), most particularly trout, salmon and shrimp.

ADVANTAGE - Genetically modified *Tagetes* produce larger amounts of (I) than the current source, *Adonis aestivalis*, and more cheaply.

ACCESSION NUMBER: 2004-489014 [47] WPIX  
 CROSS REFERENCE: 2004-215840; 2004-215841; 2004-215842; 2004-295424;  
 2004-554601; 2005-202657; 2005-202658; 2005-202663  
 DOC. NO. CPI: C2004-182265 [47]  
 DOC. NO. NON-CPI: N2004-385612 [47]  
 TITLE: Production of ketocarotenoids with low hydroxylated  
 by-product content, for use e.g. in pigmenting  
**feedstuffs**, by culturing genetically modified  
 organisms having modified ketolase activity  
 DERWENT CLASS: B05; D13; D16; E15; P13  
 INVENTOR: **FLACHMANN R; KLEBSATTEL M; SAUER**  
**M; SCHOPFER C R**  
 PATENT ASSIGNEE: (SUNG-N) SUNGENE GMBH & CO KGAA  
 COUNTRY COUNT: 1

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
DE 10253112	A1	20040603	(200447)*	DE	101[6]	

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 10253112	A1	DE 2002-10253112	20021113

PRIORITY APPLN. INFO: **DE 2002-10253112 20021113**

AN 2004-489014 [47] WPIX  
 CR 2004-215840; 2004-215841; 2004-215842; 2004-295424; 2004-554601;  
 2005-202657; 2005-202658; 2005-202663  
 AB DE 10253112 A1 UPAB: 20060121

NOVELTY - Production of ketocarotenoids (I) involves culturing genetically modified organisms having modified ketolase (KLA) activity (compared with wild strains) due to a ketolase (II) containing a specific sequence (A) of 258 aminoacids (given in the specification as SEQ. ID. NO. 2) or a mutant sequence of (A), provided that (A') has at least 42% homology with (A).

DETAILED DESCRIPTION - Production of ketocarotenoids (I) involves culturing genetically modified organisms having modified ketolase (KLA) activity (compared with wild strains) due to a ketolase (II) containing a specific sequence (A) of 258 aminoacids (given in the specification as SEQ. ID. NO. 2) or a sequence (A) derived from (A) by substitution, insertion or deletion of amino acids, provided that (A') has at least 42% homology with (A).

## INDEPENDENT CLAIMS are included for:

- (1) genetically modified organisms which:
  - (a) show increased KLA activity compared with wild strains (or into which KLA activity is introduced if the wild strain has no KLA activity), having KLA activity due to (II); and/or
  - (b) contain at least one transgenic nucleic acid encoding (A) or (A') or at least two endogenous nucleic acid sequences encoding (II);
- (2) new ketolases (II'), which contain:
  - (a) a specific sequence (Ai) of 262 aminoacids (SEQ. ID. NO. 8) or a sequence (Ai') derived from (Ai) by substitution, insertion or deletion, provided that (Ai') has at least 70% homology with (Ai) and that a specific sequence of 262 aminoacids (SEQ. ID. NO. 4) is excluded;
  - (b) a specific sequence (Aii) of 253 aminoacids (SEQ. ID. NO. 6) or a sequence (Aii') derived from (Aii) by substitution, insertion or deletion, provided that (Aii') has at least 70% homology with (Aii);



(c) a specific sequence (Aiii) of 253 aminoacids (SEQ. ID. NO. 12) or a sequence (Aiii') derived from (Aiii) by substitution, insertion or deletion, provided that (Aiii') has at least 70% homology with (Aiii) and that SEQ. ID. NO. 4 is excluded; or

(d) a specific sequence (Aiv) of 267 aminoacids (SEQ. ID. NO. 49) or a sequence (Aiv') derived from (Aiv) by substitution, insertion or deletion, provided that (Aiv') has at least 50% homology with (Aiv) and that a specific sequence of 267 aminoacids (SEQ. ID. NO. 47) is excluded, where all the sequences are defined in the specification;

(3) nucleic acids encoding (II'), provided that a specific sequence of 762 bases (SEQ. ID. NO. 5; sequence defined in the specification) is excluded; and

(4) the use as ketolase of proteins which contain SEQ. ID. NO. 4 (or a derived sequence having at least 70% homology with SEQ. ID. Number 4), SEQ. ID. NO. 6 (or a derived sequence having at least 65% homology with SEQ. ID. Number 6) or SEQ. ID. NO. 47 (or a derived sequence having at least 50% homology with SEQ. ID. Number 47) and show KLA activity, where all the sequences are defined in the specification.

USE - (I) are natural antioxidants and pigments, especially useful (particularly in the case of (Ia)) as pigmenting additives in animal **feed**, specifically **feed** for trout, salmon or shrimps. The use of the (I)-producing genetically modified organisms (specifically microorganisms or plants) is claimed as **feedstuffs** or foodstuffs, in the production of (I)-containing extracts or for producing **feed** or food supplements.

ADVANTAGE - The process provides large amounts of (I) having a low content of hydroxylated by-products, especially in the case of (Ia).

L86 ANSWER 20 OF 20 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2004-215842 [21] WPIX  
 CROSS REFERENCE: 2004-215840; 2004-215841; 2004-295424; 2004-489014;  
 2004-554601; 2005-202657; 2005-202658; 2005-202663  
 DOC. NO. CPI: C2004-085425 [21]  
 DOC. NO. NON-CPI: N2004-171009 [21]  
 TITLE: Method for preparing ketocarotenoids, useful e.g. as food  
 or **feed** supplements, by increasing, or  
 introducing, ketolase activity in the petals of  
 transgenic plants, also new nucleic acid constructs  
 DERWENT CLASS: B05; C06; D13; D16; E15; E24; P13  
 INVENTOR: **FLACHMANN R**; HERBERS K; **KLEBSATTEL M**;  
 KUNZE I; **LUCK T**; **PFEIFFER A**;  
**SAUER M**; **SCHOPFER C**; **SCHOPFER C**  
**R**; **VOESTE D**  
 PATENT ASSIGNEE: (BADI-C) BASF AG; (BADI-C) BASF PLANT SCI GMBH; (SUNG-N)  
 SUNGENE GMBH & CO KGAA  
 COUNTRY COUNT: 104

## PATENT INFO ABBR.:

PATENT NO	KIND DATE	WEEK	LA	PG	MAIN IPC
DE 10238980	A1 20040304	(200421)*	DE	140[21]	
WO 2004018688	A1 20040304	(200421)	DE		
WO 2004017749	A2 20040304	(200421)	DE		
WO 2004018385	A2 20040304	(200421)	DE		
WO 2004018693	A2 20040304	(200421)	DE		
WO 2004018694	A2 20040304	(200421)	DE		
WO 2004018695	A2 20040304	(200421)	DE		
WO 2004022765	A2 20040318	(200421)	DE		
AU 2003253416	A1 20040311	(200457)	EN		

AU 2003258622	A1	20040311	(200457)	EN
AU 2003258623	A1	20040311	(200457)	EN
AU 2003260423	A1	20040311	(200457)	EN
AU 2003260424	A1	20040311	(200457)	EN
EP 1532263	A2	20050525	(200535)	DE
EP 1532264	A2	20050525	(200535)	DE
EP 1532265	A2	20050525	(200535)	DE
EP 1532266	A2	20050525	(200535)	DE
NO 2005000703	A	20050509	(200540)	NO
NO 2005000704	A	20050513	(200540)	NO
NO 2005000705	A	20050518	(200540)	NO
NO 2005000755	A	20050519	(200540)	NO
US 20060059584	A1	20060316	(200620)	EN
AU 2003287944	A8	20051103	(200629)	EN

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 10238980	A1	<b>DE 2002-10238980</b>	<b>20020820</b>
AU 2003253416	A1	<b>AU 2003-253416</b>	<b>20030818</b>
AU 2003258622	A1	<b>AU 2003-258622</b>	<b>20030818</b>
AU 2003258623	A1	<b>AU 2003-258623</b>	<b>20030818</b>
AU 2003260423	A1	<b>AU 2003-260423</b>	<b>20030818</b>
AU 2003260424	A1	<b>AU 2003-260424</b>	<b>20030818</b>
EP 1532264	A2	<b>EP 2003-792345</b>	<b>20030818</b>
EP 1532265	A2	<b>EP 2003-792348</b>	<b>20030818</b>
EP 1532266	A2	<b>EP 2003-792349</b>	<b>20030818</b>
WO 2004018688	A1	<b>WO 2003-EP9101</b>	<b>20030818</b>
WO 2004017749	A2	<b>WO 2003-EP9109</b>	<b>20030818</b>
WO 2004018385	A2	<b>WO 2003-EP9105</b>	<b>20030818</b>
WO 2004018693	A2	<b>WO 2003-EP9102</b>	<b>20030818</b>
WO 2004018694	A2	<b>WO 2003-EP9106</b>	<b>20030818</b>
WO 2004018695	A2	<b>WO 2003-EP9107</b>	<b>20030818</b>
EP 1532264	A2	<b>WO 2003-EP9102</b>	<b>20030818</b>
EP 1532265	A2	<b>WO 2003-EP9106</b>	<b>20030818</b>
EP 1532266	A2	<b>WO 2003-EP9107</b>	<b>20030818</b>
NO 2005000703	A	<b>WO 2003-EP9106</b>	<b>20030818</b>
NO 2005000704	A	<b>WO 2003-EP9109</b>	<b>20030818</b>
NO 2005000705	A	<b>WO 2003-EP9102</b>	<b>20030818</b>
NO 2005000755	A	<b>WO 2003-EP9107</b>	<b>20030818</b>
US 20060059584	A1	<b>WO 2003-EP9101</b>	<b>20030818</b>
EP 1532263	A2	<b>EP 2003-779784</b>	<b>20030820</b>
WO 2004022765	A2	<b>WO 2003-EP9218</b>	<b>20030820</b>
EP 1532263	A2	<b>WO 2003-EP9218</b>	<b>20030820</b>
NO 2005000703	A	NO 2005-703	20050209
NO 2005000704	A	NO 2005-704	20050209
NO 2005000705	A	NO 2005-705	20050209
NO 2005000755	A	NO 2005-755	20050211
US 20060059584	A1	US 2005-524971	20050218
AU 2003287944	A8	<b>AU 2003-287944</b>	<b>20030820</b>

## FILING DETAILS:

PATENT NO	KIND		PATENT NO	
AU 2003260423	A1	Based on	WO 2004018385	A
AU 2003258622	A1	Based on	WO 2004018688	A
AU 2003258623	A1	Based on	WO 2004018693	A
EP 1532264	A2	Based on	WO 2004018693	A

AU 2003260424	A1	Based on	WO 2004018694	A
EP 1532265	A2	Based on	WO 2004018694	A
AU 2003253416	A1	Based on	WO 2004018695	A
EP 1532266	A2	Based on	WO 2004018695	A
EP 1532263	A2	Based on	WO 2004022765	A
AU 2003287944	A8	Based on	WO 2004022765	A

PRIORITY APPLN. INFO: **DE 2002-10238980 20020820**

**DE 2002-10238978 20020820**

**DE 2002-10238979 20020820**

**DE 2002-10253112 20021113**

**DE 2002-10258971 20021216**

AN 2004-215842 [21] WPIX

CR 2004-215840; 2004-215841; 2004-295424; 2004-489014; 2004-554601;  
2005-202657; 2005-202658; 2005-202663

AB DE 10238980 A1 UPAB: 20060121

NOVELTY - Method for preparing ketocarotenoids (I) by culturing genetically modified plants that, in comparison with the wild-type, have altered ketolase (II) activity in the petals.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) nucleic acid construct containing a nucleic acid (III) that encodes (II), linked functionally to a flower- or petal-specific promoter;

(2) double-stranded (ds) RNA (IV) that comprises a sense strand, including a sequence that is essentially identical with at least part of the RNA epsilon-cyclase (eC) transcript or the promoter region of the eC gene, and an antisense strand that is essentially complementary to the sense strand;

(3) transgenic expression cassette (EC) comprising a plant-functional promoter linked to a nucleic acid (V) that transcribes (IV);

(4) genetically altered plant in which activity of (II) in the petals is:

(a) increased, if already present in the wild-type; or

(b) introduced if absent from the wild type;

(5) genetically altered plant that has chromoplasts in the petals and contains at least one transgenic nucleic acid that encodes (II); and

(6) method for preparing plants of (4) and (5).

USE - The modified plants with increased (II) activity are used:

(a) as ornamentals;

(b) as food or animal **feed**; and

(c) for preparation of (I)-containing extracts or for preparing food/**feed** supplements (claimed), e.g., especially where (I) is **astaxanthin**, as a pigment for coloring trout, salmon and shrimps.

ADVANTAGE - The transgenic plants have increased content of (I).

\*\*\*\*\*SECTION 2: REFERENCES FOR CLAIMS 12-13 \*\*\*\*\*

=> d que 152

L3

1 SEA FILE=REGISTRY ABB=ON PLU=ON ASTAXANTHIN/CN

L4 1 SEA FILE=REGISTRY ABB=ON PLU=ON 472-61-7  
 L5 1 SEA FILE=REGISTRY ABB=ON PLU=ON (L3 OR L4)  
 L6 7 SEA FILE=REGISTRY ABB=ON PLU=ON 472-61-7/CRN  
 L7 8 SEA FILE=REGISTRY ABB=ON PLU=ON (L3 OR L4 OR L5 OR L6)  
 L8 2510 SEA FILE=HCAPLUS ABB=ON PLU=ON L7  
 L9 3 SEA FILE=REGISTRY ABB=ON PLU=ON (TAGETES/CN OR "TAGETES  
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 PATULA, EXT. "/CN)  
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 L11 0 SEA FILE=REGISTRY ABB=ON PLU=ON 91722-29-1/CRN  
 L12 0 SEA FILE=REGISTRY ABB=ON PLU=ON 90131-43-4/CRN  
 L13 0 SEA FILE=HCAPLUS ABB=ON PLU=ON L9  
 L14 812 SEA FILE=HCAPLUS ABB=ON PLU=ON TAGETES+NT/CT  
 L15 173 SEA FILE=HCAPLUS ABB=ON PLU=ON TAGETES/CT  
 L16 1 SEA FILE=HCAPLUS ABB=ON PLU=ON "TAGETES BIFLORA"/CT  
 L17 1 SEA FILE=HCAPLUS ABB=ON PLU=ON "TAGETES BIPINATA"/CT  
 L18 315 SEA FILE=HCAPLUS ABB=ON PLU=ON "TAGETES ERECTA"/CT  
 L19 1097 SEA FILE=HCAPLUS ABB=ON PLU=ON TAGETES?  
 L20 2506 SEA FILE=HCAPLUS ABB=ON PLU=ON ASTAXANTHIN/CT  
 L21 4 SEA FILE=HCAPLUS ABB=ON PLU=ON "EUBACTERIA (L) ASTAXANTHIN-PR  
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 L22 2990 SEA FILE=HCAPLUS ABB=ON PLU=ON ASTAXANTHIN? OR ASTAREAL OR  
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 OR TRANS ASTAXANTHIN  
 L23 4149 SEA FILE=HCAPLUS ABB=ON PLU=ON (L3 OR L4 OR L5 OR L6 OR L7  
 OR L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15 OR L16  
 OR L17 OR L18 OR L19 OR L20 OR L21 OR L22)  
 L25 590916 SEA FILE=HCAPLUS ABB=ON PLU=ON 17/SC, SX  
 L26 797 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 AND L25  
 L27 9526 SEA FILE=HCAPLUS ABB=ON PLU=ON 17-12/SC, SX  
 L28 81 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 AND L27  
 L29 81 SEA FILE=HCAPLUS ABB=ON PLU=ON L26 AND L27  
 L30 81 SEA FILE=HCAPLUS ABB=ON PLU=ON (L28 OR L29)  
 L31 75 SEA FILE=HCAPLUS ABB=ON PLU=ON L30 AND FEED?  
 L32 81 SEA FILE=HCAPLUS ABB=ON PLU=ON (L30 OR L31)  
 L33 23 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 (L) (PREP OR PROC)/RL  
 L34 42 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND (PROC? OR PREP?)  
 L35 52 SEA FILE=HCAPLUS ABB=ON PLU=ON (L33 OR L34)  
 L36 43 SEA FILE=HCAPLUS ABB=ON PLU=ON L35 AND (PY<2004 OR AY<2004  
 OR PRY<2004)  
 L37 41 SEA FILE=HCAPLUS ABB=ON PLU=ON L36 AND L22  
 L38 43 SEA FILE=HCAPLUS ABB=ON PLU=ON (L36 OR L37)  
 L49 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L38 AND (ANIMAL FEED?)  
 L50 96075 SEA FILE=HCAPLUS ABB=ON PLU=ON FEED+OLD, NT/CT  
 L51 28 SEA FILE=HCAPLUS ABB=ON PLU=ON L38 AND (L49 OR L50)  
 L52 28 SEA FILE=HCAPLUS ABB=ON PLU=ON (L51 OR L49)

=> d que 148

L3 1 SEA FILE=REGISTRY ABB=ON PLU=ON ASTAXANTHIN/CN  
 L4 1 SEA FILE=REGISTRY ABB=ON PLU=ON 472-61-7  
 L5 1 SEA FILE=REGISTRY ABB=ON PLU=ON (L3 OR L4)  
 L6 7 SEA FILE=REGISTRY ABB=ON PLU=ON 472-61-7/CRN  
 L7 8 SEA FILE=REGISTRY ABB=ON PLU=ON (L3 OR L4 OR L5 OR L6)  
 L9 3 SEA FILE=REGISTRY ABB=ON PLU=ON (TAGETES/CN OR "TAGETES  
 ERECTA, EXT. "/CN OR "TAGETES MINUTA, EXT. "/CN OR "TAGETES  
 PATULA, EXT. "/CN)  
 L19 1097 SEA FILE=HCAPLUS ABB=ON PLU=ON TAGETES?  
 L22 2990 SEA FILE=HCAPLUS ABB=ON PLU=ON ASTAXANTHIN? OR ASTAREAL OR  
 BIOASTIN? OR NATUPINK? OR NATUROSE? OR OVOESTER? OR CAROPHYLL?

## OR TRANS ASTAXANTHIN

L39 11 SEA FILE=REGISTRY ABB=ON PLU=ON (L7 OR L9)  
 L40 2133 SEA L39  
 L41 6500 SEA (L19 OR L22)  
 L42 6556 SEA (L40 OR L41)  
 L43 1017 SEA L42 AND (FEED?)  
 L44 923 SEA L43 AND L22  
 L45 152 SEA L44 AND (ANIMAL FEED?)  
 L46 68 SEA L45 AND (AY<2003 OR AY<2003 OR PRY<2003)  
 L47 44 SEA L46 AND (PROC? OR PREP?)  
 L48 44 DUP REM L47 (0 DUPLICATES REMOVED)

=> dup rem 152,148

DUPLICATE IS NOT AVAILABLE IN 'CAOLD'.  
 ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE  
 FILE 'HCAPLUS' ENTERED AT 14:42:37 ON 13 MAR 2007  
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
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 PROCESSING COMPLETED FOR L52  
 PROCESSING COMPLETED FOR L48

L87 71 DUP REM L52 L48 (1 DUPLICATE REMOVED)  
 ANSWERS '1-28' FROM FILE HCAPLUS  
 ANSWERS '29-65' FROM FILE WPIX  
 ANSWERS '66-71' FROM FILE FROSTI

=> d ibib abs hitind retable 187 1-28;d ibib abs 187 29-71

L87 ANSWER 1 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 1  
 ACCESSION NUMBER: 2002:10213 HCAPLUS Full-text  
 DOCUMENT NUMBER: 136:69139  
 TITLE: Bioactive food complex, method for making bioactive  
 food complex product and method for controlling  
 disease  
 INVENTOR(S): Villamar, Daniel F.; Moriarty, David J. W.  
 PATENT ASSIGNEE(S): Acuabiotec Llc, USA  
 SOURCE: PCT Int. Appl., 38 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002000035	A1	20020103	WO 2001-US16489	20010622 <--
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,			

DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,

BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

US 2004009160

A1

20040115

US 2003-312039

20030715 &lt;--

PRIORITY APPLN. INFO.:

US 2000-213538P

P 20000623 &lt;--

WO 2001-US16489

W 20010622 &lt;--

AB A bioactive food complex product, method for **preparing** a bioactive food complex product and method for controlling disease uses probiotics and quorum sensing inhibitors such as inhibitory furanones and other bioactive compds. included in both the continuous and dispersed phases of a bioactive food complex product. The product is comprised of a solids-in-oil or an oil-in-solids emulsion forming a first emulsion that is itself emulsified in polymer forming oil-in-polymer or solids-in-polymer emulsion complex. The bioactive complex is formed of two emulsions with the first emulsion comprising the dispersed phase and a hydrocolloid polymer serving as the continuous phase. The second emulsion complex is then crosslinked to form a phys. stable matrix. The bioactive food complex or the first emulsion of the bioactive food complex then serve to deliver different bioactive components including probiotic bacteria and quorum sensing inhibitor mols. to the digestive tract and environment of animals such as shrimp or fish or other livestock raised com. to effectively control bacterial disease by a novel combination of mechanisms including: competitive exclusion, direct inhibition, digestion of cell-to-cell signaling mols. and direct inhibition of homoserine lactone and (acyl) homoserine lactone-regulated **processes** of pathogenic bacteria. Thus, effective disease prevention and control is accomplished through the novel combined delivery and use of probiotic bacteria and quorum sensing inhibitory furanones.

IC ICM A23K001-165

ICS A23K001-17

CC 17-12 (Food and Feed Chemistry)

IT Aeromonas

Algae

Alteromonas

Animal tissue

Antioxidants

Aquariums

Aquatic animal

Bacilli

Bacillus (bacterium genus)

Bacillus circulans

Bacillus firmus

Bacillus licheniformis

Bacillus pumilus

Bacillus subtilis

Bifidobacterium

Brachionus

Brevibacillus laterosporus

Brewers' yeast

Candida utilis

Carnobacterium

Chaetoceros

Cladocera

Daphnia

Disease, animal

Drug delivery systems

Dunaliella

Embryo, animal

Emulsifying agents

Eubacteria

**Feed** additives

Fish

Food emulsions  
 Food gels  
 Frozen foods  
 Haematococcus  
 Insecta  
 Invertebrata  
 Isochrysis  
 Lactobacillus  
 Larva  
 Leuconostoc  
 Listonella anguillarum  
 Metazoa  
 Micrococcus  
 Nannochloropsis  
 Nematoda  
 Newborn  
 Oligochaeta  
 Paenibacillus macerans  
 Paenibacillus polymyxa  
 Pathogenic bacteria  
 Pavlova  
 Phaeodactylum  
 Phaffia  
 Plant tissue  
 Polychaeta  
 Probiotics  
 Protozoa  
 Rotifera  
 Schizochytrium  
 Shrimp  
 Skeletonema  
 Streptococcus  
 Tetraselmis  
 Thalassiosira  
 Vibrio  
 Vibrio alginolyticus  
 Vibrio cholerae  
 Vibrio harveyi  
 Vibrio mimicus  
 Vibrio parahaemolyticus  
 Vibrio splendidus

(bioactive food complex, method for making bioactive food complex product and method for controlling disease)

IT **Feed**

(containers for; bioactive food complex, method for making bioactive food complex product and method for controlling disease)

IT **Feed additives**

(emulsions; bioactive food complex, method for making bioactive food complex product and method for controlling disease)

IT 50-81-7D, L-Ascorbic acid, Polyphosphate esters 57-88-5, Cholesterol, biological studies 58-56-0, Pyridoxine hydrochloride 58-85-5, D-Biotin 59-30-3, Folic acid, biological studies 59-67-6, Niacin, biological studies 67-03-8, Thiamin hydrochloride 67-48-1, Choline chloride 67-97-0, Vitamin D3 68-19-9, Cyanocobalamin 79-57-2, Terramycin 79-83-4, D-Pantothenic acid 83-88-5, Riboflavin, biological studies 87-89-8, myo-Inositol 150-13-0, p-Aminobenzoic acid **472-61-7**, **Astaxanthin** 1406-18-4, Vitamin E 6217-54-5, Cervonic acid 7440-09-7, Potassium, biological studies 7440-23-5, Sodium, biological studies 7440-70-2, Calcium, biological studies 8076-37-7, Romet 9000-01-5, Gum acacia 9000-07-1, Carrageenan 9000-40-2, Locust bean

gum 9005-32-7, Alginic acid 9012-76-4, Chitosan 10417-94-4  
 11103-57-4, Provitamin A 12001-79-5, Vitamin K 25104-18-1, Polylysine  
 25212-18-4, Polyarginine 85554-61-6D, Furanone, derivs. 91296-87-6,  
 Sarafin 152443-97-5, STAY-C  
 RL: FFD (Food or feed use); THU (Therapeutic use); BIOL (Biological  
 study); USES (Uses)

(bioactive food complex, method for making bioactive food complex  
 product and method for controlling disease)

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Ellingsen	1992			US 5169634 A	HCAPLUS
Villamar	1997			US 5698246 A	HCAPLUS

L87 ANSWER 2 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:572370 HCAPLUS Full-text  
 DOCUMENT NUMBER: 143:77392  
 TITLE: Fish food flakes  
 INVENTOR(S): Keilbach, Lauren  
 PATENT ASSIGNEE(S): USA  
 SOURCE: U.S. Pat. Appl. Publ., 10 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005142263	A1	20050630	US 2004-803803	20040318 <--
PRIORITY APPLN. INFO.:			US 2003-533579P	P 20031230 <--
			US 2004-535394P	P 20040109

AB A method of **preparing** fish food flakes is provided. The method includes the steps of **preparing** a slurry that incorporates fish meal and flour, applying heat to the slurry in order to dry the slurry into a sheet, adding a solution containing one or more water dispersable nutritional ingredients to the slurry as the slurry is drying such that the slurry has sufficiently cooled in order to prevent degradation of the applied nutritional ingredients, and breaking up the dried slurry after the solution containing the nutritional ingredients has been added in order to form a plurality of fish flakes.

IC ICM A23L001-10  
 INCL 426457000  
 CC 17-12 (Food and Feed Chemistry)  
 ST fish **feed** flake nutrient application  
 IT Attractants  
 Carassius auratus  
 Coloring materials  
 Drying  
**Feed**  
 Flavor  
 Flavoring materials  
 Nutrients  
 Pulverization  
 Sieving  
**Wheat flour**  
 (fish food flakes)  
 IT Coating **process**  
 (spray; fish food flakes)  
 IT 50-81-7D, Vitamin C, esters 59-51-8, Methionine 67-48-1, Choline



chloride 107-43-7, Betaine 127-40-2, Lutein 472-61-7,

**Astaxanthin** 7235-40-7,  $\beta$ -CaroteneRL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(fish food flakes)

L87 ANSWER 3 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:182633 HCAPLUS Full-text

DOCUMENT NUMBER: 140:234841

TITLE: Use of **astaxanthin**-containing plants or  
parts of plants of the genus **Tagetes** as  
**feed** additives for improvement of pigmentation  
of animals, especially aquatic animals.INVENTOR(S): Flachmann, Ralf; Sauer, Matt; Schopfer, Christel  
Renate; Klebsattel, Martin; Pfeiffer, Angelika-Maria;  
Luck, Thomas; Voeste, DirkPATENT ASSIGNEE(S): Sungene G.m.b.H. & Co. K.-G.a.A., Germany; BASF  
Aktiengesellschaft; BASF Plant Science G.m.b.H.

SOURCE: PCT Int. Appl., 391 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 14

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004017749	A2	20040304	WO 2003-EP9109	20030818 <--
WO 2004017749	A3	20041014		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
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DE 10238979	A1	20040226	DE 2002-10238979	20020820 <--
DE 10238978	A1	20040304	DE 2002-10238978	20020820 <--
DE 10238980	A1	20040304	DE 2002-10238980	20020820 <--
DE 10253112	A1	20040603	DE 2002-10253112	20021113 <--
DE 10258971	A1	20040701	DE 2002-10258971	20021216 <--
CA 2495235	A1	20040304	CA 2003-2495235	20030818 <--
AU 2003264062	A1	20040311	AU 2003-264062	20030818 <--
EP 1531683	A2	20050525	EP 2003-792350	20030818 <--
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK			
AU 2004267196	A1	20050303	AU 2004-267196	20040731 <--
CA 2535972	A1	20050303	CA 2004-2535972	20040731 <--
WO 2005019467	A1	20050303	WO 2004-EP8623	20040731 <--
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
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SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,  
SN, TD, TG

WO 2005019460	A2	20050303	WO 2004-EP8624	20040731 <--
WO 2005019460	A3	20050721		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
WO 2005019461	A2	20050303	WO 2004-EP8625	20040731 <--
WO 2005019461	A3	20050616		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
EP 1658377	A1	20060524	EP 2004-741347	20040731 <--
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EP 1658371	A2	20060524	EP 2004-763695	20040731 <--
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK			
EP 1658372	A2	20060524	EP 2004-763696	20040731 <--
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK			
CN 1863922	A	20061115	CN 2004-80029068	20040731 <--
JP 2007502605	T	20070215	JP 2006-523556	20040731 <--
NO 2005000704	A	20050513	NO 2005-704	20050209 <--
US 2005281909	A1	20051222	US 2005-524647	20050217 <--
NO 2006000720	A	20060427	NO 2006-720	20060214 <--
US 2006162020	A1	20060720	US 2006-568741	20060217 <--
US 2006194274	A1	20060831	US 2006-569022	20060217 <--
PRIORITY APPLN. INFO.:			DE 2002-10238978	A 20020820 <--
			DE 2002-10238979	A 20020820 <--
			DE 2002-10238980	A 20020820 <--
			DE 2002-10253112	A 20021113 <--
			DE 2002-10258971	A 20021216 <--
			WO 2003-EP309101	A 20030818 <--
			WO 2003-EP309102	A 20030818 <--
			WO 2003-EP309105	A 20030818 <--
			WO 2003-EP309106	A 20030818 <--
			WO 2003-EP309107	A 20030818 <--
			WO 2003-EP309109	A 20030818 <--
			WO 2003-EP9101	A 20030818 <--
			WO 2003-EP9102	A 20030818 <--
			WO 2003-EP9105	A 20030818 <--
			WO 2003-EP9106	A 20030818 <--
			WO 2003-EP9107	A 20030818 <--

WO 2003-EP9109 W 20030818 <--  
 DE 2004-102004007622A 20040217  
 DE 2004-102004007623A 20040217  
 DE 2004-102004007624A 20040217  
 WO 2004-EP8623 W 20040731  
 WO 2004-EP8624 W 20040731  
 WO 2004-EP8625 W 20040731

- AB The invention relates to the use of **astaxanthin**-containing plants or parts of plants of the genus **Tagetes** or **astaxanthin** -containing exts. of **astaxanthin**-containing plants or parts of plants of the genus **Tagetes** for oral administration to animals. The invention also relates to methods for producing **animal feed preps.**, to said **animal feed preps.** themselves, to a method for the pigmentation of animals or animal products, and to a method for producing pigmented animals and animal products, especially aquatic organisms such as trout, salmon and shrimp.
- IC ICM A23K
- CC 17-12 (Food and Feed Chemistry)  
 Section cross-reference(s): 18
- ST **astaxanthin** plant **Tagetes feed** additive  
 aquatic organism fish shrimp
- IT Haematococcus pluvialis  
 (carotenoid ketolase of; use of **astaxanthin**-containing plants or parts of plants of the genus **Tagetes** as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)
- IT Flower  
 (petal; use of **astaxanthin**-containing plants or parts of plants of the genus **Tagetes** as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)
- IT Flower  
 (pigments of; use of **astaxanthin**-containing plants or parts of plants of the genus **Tagetes** as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)
- IT Pigments, biological  
 (plant; use of **astaxanthin**-containing plants or parts of plants of the genus **Tagetes** as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)
- IT **Feed**  
 (trout; use of **astaxanthin**-containing plants or parts of plants of the genus **Tagetes** as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)
- IT Anas domesticus  
 Anatidae  
 Aquatic animal  
 Crab  
 Crustacea  
 Egg yolk  
 Feather  
**Feed** additives  
 Fish  
 Galliformes  
 Gallus domesticus  
 Goose  
 Marine animal  
 Meat  
 Phoenicopterus  
 Pigments, biological  
 Salmon  
 Salmonidae  
 Shrimp

Skin

*Tagetes**Tagetes erecta*

Trout

(use of **astaxanthin**-containing plants or parts of plants of the genus *Tagetes* as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)

IT Carotenes, biological studies

RL: FFD (Food or feed use); IMF (Industrial manufacture); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)

(use of **astaxanthin**-containing plants or parts of plants of the genus *Tagetes* as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)

IT	668498-68-8	668498-70-2	668498-72-4	668498-74-6	668498-76-8
	668498-78-0	668498-80-4	668498-82-6	668498-84-8	668498-86-0
	668498-88-2	668498-89-3	668498-91-7	668498-93-9	668498-95-1
	668498-96-2	668498-97-3	668498-98-4	668498-99-5	668499-00-1
	668499-01-2	668499-02-3	668499-03-4	668499-04-5	668499-05-6
	668499-07-8	668499-08-9	668499-09-0	668499-10-3	668499-11-4
	668499-12-5	668499-13-6	668499-14-7	668499-15-8	668499-16-9
	668499-17-0	668499-18-1	668499-19-2	668499-20-5	668499-21-6
	668499-22-7	668499-23-8	668499-24-9	668499-25-0	668499-26-1
	668499-27-2	668499-28-3	668499-29-4	668499-30-7	668499-31-8
	668499-32-9	668499-33-0	668499-34-1	668499-35-2	668499-36-3
	668499-37-4	668499-38-5	668499-39-6	668499-40-9	668499-41-0
	668499-42-1	668499-43-2	668499-45-4	668499-47-6	668499-49-8
	668499-50-1	668499-51-2	668499-52-3	668499-53-4	668499-54-5
	668499-55-6	668499-56-7	668499-58-9	668499-60-3	668499-62-5
	668499-64-7	668499-66-9	668499-68-1	668499-70-5	668499-72-7
	668499-74-9	668499-76-1	668499-78-3	668499-80-7	668499-82-9
	668499-84-1	668499-86-3	668499-88-5	668499-90-9	668499-92-1
	668499-94-3	668499-96-5	668499-98-7		

RL: PRP (Properties)

(unclaimed nucleotide sequence; use of **astaxanthin**-containing plants or parts of plants of the genus *Tagetes* as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)

IT	668498-69-9	668498-71-3	668498-73-5	668498-75-7	668498-77-9
	668498-79-1	668498-81-5	668498-83-7	668498-85-9	668498-87-1
	668498-90-6	668498-92-8	668498-94-0	668499-06-7	668499-44-3
	668499-46-5	668499-48-7	668499-57-8	668499-59-0	668499-61-4
	668499-63-6	668499-65-8	668499-67-0	668499-69-2	668499-71-6
	668499-73-8	668499-75-0	668499-77-2	668499-79-4	668499-81-8
	668499-83-0	668499-85-2	668499-87-4	668499-89-6	668499-91-0
	668499-93-2	668499-95-4	668499-97-6		

RL: PRP (Properties)

(unclaimed protein sequence; use of **astaxanthin**-containing plants or parts of plants of the genus *Tagetes* as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)

IT 668499-99-8 668500-00-3

RL: PRP (Properties)

(unclaimed sequence; use of **astaxanthin**-containing plants or parts of plants of the genus *Tagetes* as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)

IT 126-29-4, Violaxanthin 127-40-2, Lutein 144-68-3, Zeaxanthin 7235-40-7,  $\beta$ -Carotene

RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(use of **astaxanthin**-containing plants or parts of plants of the

genus *Tagetes* as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)

IT 149103-16-2, GenBank T06774 . 162832-86-2, GenBank T51088 162863-90-3, GenBank T52570 169592-65-8, Canthaxanthin synthase 178700-03-3, GenBank X98795 187260-93-1, GenBank U80605 200520-71-4, GenBank AB009053 204886-82-8, GenBank AJ224683 225680-06-8, GenBank AF124757 225723-11-5, GenBank AJ242588 225906-18-3, GenBank AF143812 242448-12-0, GenBank AF182286 242448-13-1, GenBank AF182287 252718-69-7, GenBank AF205858 256898-50-7, GenBank AF120117 262816-31-9, GenBank AF250235 268187-64-0, GenBank AF148852 274670-88-1, GenBank AF251346 288364-21-6, GenBank AF251019 288567-83-9, GenBank AF296158 294611-72-6, GenBank AF270978 304427-53-0, GenBank AF315289 304639-23-4, GenBank Y17376 349073-40-1, GenBank AY045634 352851-25-3, GenBank AF398145 352851-26-4, GenBank AF398146 353437-60-2, GenBank AY050802 354754-44-2, GenBank AF331705 355366-04-0, GenBank AY054682 373586-18-6, GenBank AF367205 384420-88-6, GenBank D90087 414475-58-4, GenBank AF416727 420006-52-6, GenBank AY081453 421329-27-3, GenBank AY091405 423482-46-6, GenBank AY098952 431827-27-9, GenBank AY084775 432480-24-5, GenBank AF514843 496155-17-0, GenBank AY202991

RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)

(use of **astaxanthin**-containing plants or parts of plants of the genus *Tagetes* as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)

IT **472-61-7P, Astaxanthin**

RL: FFD (Food or feed use); IMF (Industrial manufacture); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)

(use of **astaxanthin**-containing plants or parts of plants of the genus *Tagetes* as **feed** additives for improvement of pigmentation of animals, especially aquatic animals.)

L87 ANSWER 4 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:739761 HCAPLUS Full-text

DOCUMENT NUMBER: 141:242454

TITLE: Dietary supplement for athletic pets

INVENTOR(S): Sidebottom, Monique Y.; Reynolds, Arleigh J.

PATENT ASSIGNEE(S): Nestec S.A., USA

SOURCE: U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004175413	A1	20040909	US 2003-382289	20030305 <--
AU 2004218348	A1	20040916	AU 2004-218348	20040304 <--
CA 2517608	A1	20040916	CA 2004-2517608	20040304 <--
WO 2004077961	A1	20040916	WO 2004-US6513	20040304 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1601256	A1	20051207	EP 2004-717410	20040304 <--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK  
 BR 2004008098 A 20060214 BR 2004-8098 20040304 <--  
 CN 1756488 A 20060405 CN 2004-80006014 20040304 <--  
 JP 2006519617 T 20060831 JP 2006-509048 20040304 <--  
 PRIORITY APPLN. INFO.: US 2003-382289 A 20030305 <--  
 WO 2004-US6513 W 20040304

AB A method for helping pets recover from periods of strenuous activity includes providing a source of carbohydrates formulated to provide a readily available replenishment source of glycogen for the pet and providing a replenishment source of vitamins, minerals, and antioxidants which are expended at rates that are higher during the strenuous activity than during non-strenuous activity.

IC ICM A23K001-165  
 ICS A23K001-17; A23L001-20

INCL 424442000; X42-663.0

CC **17-12** (Food and Feed Chemistry)  
 Section cross-reference(s): 18

IT Antioxidants  
 Brewers' yeast  
 Cheese  
 Dietary supplements  
 Exercise  
 Fish  
 Food preservatives  
 Meat

**Molasses**

Nut (seed)  
 Nutrients  
 Nutrition, animal

**Oatmeal**

Oryza sativa  
 Pet animal

**Soybean meal**

Triticum aestivum  
 Vanilla

**Wheat flour**

(dietary supplement for athletic pets providing replenishment source of glycogen)

IT **Flours and Meals**

(rice; dietary supplement for athletic pets providing replenishment source of glycogen)

IT **Milk preparations**

(yogurt; dietary supplement for athletic pets providing replenishment source of glycogen)

IT **472-61-7, Astaxanthin**

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (antioxidant; dietary supplement for athletic pets providing replenishment source of glycogen)

L87 ANSWER 5 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:376944 HCAPLUS Full-text

DOCUMENT NUMBER: 138:367932

TITLE: Carotenoid pigment for salmonid **feeds**.

INVENTOR(S): Breivik, Harald; Aanesen, Berit Annie; Kulas, Elin

PATENT ASSIGNEE(S): Norsk Hydro ASA, Norway

SOURCE: PCT Int. Appl., 14 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003040238	A1	20030515	WO 2002-NO373	20021015 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
NO 2001005442	A	20030508	NO 2001-5442	20011107 <--
NO 315004	B1	20030623		
CA 2466068	A1	20030515	CA 2002-2466068	20021015 <--
EP 1442083	A1	20040804	EP 2002-802750	20021015 <--
EP 1442083	B1	20050518		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
CN 1589296	A	20050302	CN 2002-823140	20021015 <--
AT 295870	T	20050615	AT 2002-802750	20021015 <--
ES 2238636	T3	20050901	ES 2002-2802750	20021015 <--
US 2005014824	A1	20050120	US 2004-494706	20040909 <--
PRIORITY APPLN. INFO.:			NO 2001-5442	A 20011107 <--
			WO 2002-NO373	W 20021015 <--

AB This invention relates to a new pigment in **feed** for salmonids, a new **feed** comprising this pigment and use of this pigment. The pigment comprises a diester of predominantly (3R,3'R)-**astaxanthin**, canthaxanthin or other carotenoids that can be used for pigmentation of salmonids **prepared** with an omega-3 fatty acid and/or a short-chain carboxylic acid. By this invention a pigment for **feed** for salmonids that is more stable or as stable as, and biol. more effective than free **astaxanthin** and previously known diesters of **astaxanthin** and com. available **astaxanthin** and canthaxanthin products, is provided. The said diesters are also useful for enhancing the growth of farmed fish, as a growth-enhancing agent in **feed** for farmed fish, as an appetizer in **feed** for fish as well as for increasing the utilization of the **feed** for farmed fish, and for optimizing health and well-being of farmed fish.

IC ICM C09B061-00  
ICS C09B009-00; A23K001-16; A23K001-18

CC 17-12 (Food and Feed Chemistry)

ST carotenoid diester pigment **feed** salmonid; n3 fatty acid  
carotenoid diester pigment **feed** salmonid

IT Appetite stimulants  
**Feed** additives  
Pfaffia rhodozyma  
Pigments, biological  
Salmonidae  
Stereochemistry  
(carotenoid pigment for salmonid **feeds**)

IT Growth factors, animal  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(carotenoid pigment for salmonid **feeds**)

IT Carotenes, biological studies  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(diesters; carotenoid pigment for salmonid **feeds**)

IT Fatty acids, biological studies

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(polyunsatd., omega-3, **astaxanthin** and canthaxanthin esters;  
carotenoid pigment for salmonid **feeds**)

IT **Feed**

(salmonid; carotenoid pigment for salmonid **feeds**)

## IT Fatty acids, biological studies

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(short-chain, **astaxanthin** and canthaxanthin esters;  
carotenoid pigment for salmonid **feeds**)

IT 514-78-3D, Canthaxanthin, diesters 60760-95-4D,  $\beta,\beta$ -Carotene-4,4'-dione, 3,3'-dihydroxy-, (3R,3'R)-, diesters

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(carotenoid pigment for salmonid **feeds**)

## IT 64-18-6, Formic acid, reactions 6217-54-5, Docosaheptaenoic acid 10417-94-4, Eicosapentaenoic acid

RL: RCT (Reactant); RACT (Reactant or reagent)  
(carotenoid pigment for salmonid **feeds**)

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	+	+	+	+	+
Astacarotene Ab	1997			WO 9735491 A1	
Itan-N Itano Reito Kk	1995			JP 7300421 A	
Norsk Hydro Asa	2000			WO 0062625 A1	HCAPLUS
Roche Vitamins Ag	2002			EP 1186245 A2	HCAPLUS

L87 ANSWER 6 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:57838 HCAPLUS Full-text

DOCUMENT NUMBER: 138:89083

TITLE: Fish **feeds**

INVENTOR(S): Nakagawa, Atsushi; Asano, Masaya; Emoto, Hideharu

PATENT ASSIGNEE(S): Kyowa Hakko Kogyo Co., Ltd., Japan

SOURCE: PCT Int. Appl., 20 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
WO 2003005835	A1	20030123	WO 2002-JP6834	20020705 <--
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

PRIORITY APPLN. INFO.: JP 2001-208554 A 20010709 <--

AB Fish **feeds** obtained by coating fish **feed** pellets with a coating comprising an aqueous alc. solution containing zein; a **process** for producing such a fish **feed**; a method of fish cultivation characterized by **feeding** with such a fish **feed**; and a method of preventing or treating fish diseases are given. **Prepn** . of coated praziquantel-containing fish **feed** for prevention of loss and leaking of the praziquantel was shown.

IC ICM A23K001-18



ICS A23K001-16  
 CC 17-12 (Food and Feed Chemistry)  
 ST fish **feed** pharmaceutical praziquantel coating zein  
 IT Aquaculture  
 Coating materials  
 Coloring materials  
 Drugs  
**Feed**  
 Fish  
 (zein-containing coating of fish **feed** and pharmaceutical)  
 IT Alcohols, biological studies  
 Amino acids, biological studies  
 Vitamins  
 Zeins  
 RL: AGR (Agricultural use); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (zein-containing coating of fish **feed** and pharmaceutical)  
 IT 50-81-7, Vitamin C, biological studies 56-87-1, L-Lysine, biological studies 59-43-8, Vitamin b1, biological studies 63-68-3, L-Methionine, biological studies 64-17-5, Ethanol, biological studies 68-26-8, Vitamin a 69-53-4, Ampicillin 70-18-8, Glutathione, biological studies 71-00-1, L-Histidine, biological studies 73-22-3, L-Tryptophan, biological studies 74-79-3, L-Arginine, biological studies 112-80-1, Oleic acid, biological studies 114-07-8, Erythromycin 472-61-7, **Astaxanthin** 514-78-3, Canthaxanthin 859-18-7, Lincomycin hydrochloride 1406-16-2, Vitamin d 1406-18-4, Vitamin e 2058-46-0, Oxytetracycline hydrochloride 7235-40-7,  $\beta$ -Carotene 8025-81-8, Spiramycin 9066-59-5, Lysozyme chloride 42835-25-6, Flumequine 54992-23-3, Sodium Nifurstyrenate 55268-74-1, Praziquantel  
 RL: AGR (Agricultural use); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (zein-containing coating of fish **feed** and pharmaceutical)

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Kyowa Hakko Kogyo Co Ltd	1984			JP 59-59153 A	
Kyowa Hakko Kogyo Co Ltd	1989			JP 01-215248 A	HCAPLUS
Maruzen Pharmaceuticals	1999			JP 11-322592 A	HCAPLUS
Nippon Soda Co Ltd	1999			JP 10-215789 A	HCAPLUS
Nippon Soda Co Ltd	1999			AU 5136298 A	
Nippon Soda Co Ltd	1999			US 6203829 B1	HCAPLUS
Nippon Soda Co Ltd	1999			EP 963703 A1	HCAPLUS
Nippon Soda Co Ltd	1999			WO 9824329 A1	HCAPLUS
Riken Vitamin Co Ltd	1983			JP 58-47445 A	
Showa Sangyo Co Ltd	1991			JP 03-207775 A	HCAPLUS
Showa Sangyo Co Ltd	2000			EP 1043354 A1	HCAPLUS
Showa Sangyo Co Ltd	2000			JP 11-189666 A	HCAPLUS
Showa Sangyo Co Ltd	2000			AU 1689299 A	
Showa Sangyo Co Ltd	2000			AU 736620 B	HCAPLUS
Showa Sangyo Co Ltd	2000			BR 9814474 A	HCAPLUS
Showa Sangyo Co Ltd	2000			WO 9933905 A1	HCAPLUS

L87 ANSWER 7 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:199654 HCAPLUS Full-text

DOCUMENT NUMBER: 138:367871

TITLE: Mixed Culture Optimization for Marigold Flower  
 Ensilage via Experimental Design and Response Surface  
 Methodology

AUTHOR(S): Navarrete-Bolanos, Jose Luis; Jimenez-Islas, Hugo;

CORPORATE SOURCE: Botello-Alvarez, Enrique; Rico-Martinez, Ramiro  
 Departamento de Ingenieria Quimica-Bioquimica,  
 Instituto Tecnologico de Celaya, Celaya, 38010, Mex.

SOURCE: Journal of Agricultural and Food Chemistry ( **2003**), 51(8), 2206-2211  
 CODEN: JAFCAU; ISSN: 0021-8561

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Endogenous microorganisms isolated from the marigold flower ( *Tagetes erecta*) were studied to understand the events taking place during its ensilage. Studies of the cellulase enzymic activity and the ensilage **process** were undertaken. In both studies, the use of approx. second-order models and multiple lineal regression, within the context of an exptl. mixture design using the response surface methodol. as optimization strategy, determined that the microorganisms *Flavobacterium IIB*, *Acinetobacter anitratus*, and *Rhizopus nigricans* are the most significant in marigold flower ensilage and exhibit high cellulase activity. A mixed culture comprised of 9.8% *Flavobacterium IIB*, 41% *A. anitratus*, and 49.2% *R. nigricans* used during ensilage resulted in an increased yield of total xanthophylls extracted of 24.94 g/kg of dry weight compared with 12.92 for the uninoculated control ensilage.

CC 17-12 (Food and Feed Chemistry)

IT **Silage**

(marigold; mixed culture optimization for marigold flower ensiling)

IT **Tagetes erecta**

(silage; mixed culture optimization for marigold flower ensiling)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Aoac	1992			Official Methods of	
Bouksain, M	2000	59	141	Int J Food Microbiol	
Busch, J	1999	24	132	Ecol Entomol	
Chen, I	2000	32	675	Water Environ Res	
Delgado-Vargas, F	1997	45	1097	J Agric Food Chem	HCAPLUS
Eber, T	1999	55	783	Pest Sci	
Favati, F	1988	53	1532	J Food Sci	HCAPLUS
Fullmer, L	2001	46	408	Am Assoc Cereal Chem	HCAPLUS
Hencken, H	1992	71	711	Poult Sci	HCAPLUS
Hirschberg, J	1999			US 5935808	HCAPLUS
Jacobson, G	2000			US 6015684	HCAPLUS
Kennedy, M	1999	23	456	J Ind Microbiol Tech	HCAPLUS
Kreienbuhl, P	2000			US 6150561	HCAPLUS
Laemmli, U	1970	227	680	Nature	HCAPLUS
Lechner, U	1997	31	1749	Environ Sci Technol	
Lee, S	2000	66	3807	Appl Environ Microbi	HCAPLUS
Luedeking, R	1959	1	393	J Biochem Microbiol	HCAPLUS
Malundo, T	2001	126	115	J Am Soc Hortic	HCAPLUS
Montgomery, D	1997		372	Design and analysis	
Prescott, L	1999		725	Microbiology, 4th ed	
Press, W	1996	I	340	Numerical Recipes in	
Seddon, J	1994	272	1413	J Am Med Assoc	HCAPLUS
Sodini, I	2000	54	715	Appl Microbiol Biote	HCAPLUS
Stanier, R	1986		17	The Microbial World,	
Tyczkowski, J	1987	66	1184	Poult Sci	HCAPLUS
Vazquez, M	1998	57	315	Biotechnol Bioeng.	
Verhulst, P	1838		113	Corr Math et Phys	

L87 ANSWER 8 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:526462 HCAPLUS Full-text

DOCUMENT NUMBER: 141:423552  
 TITLE: Feathers as agro-industrial waste: Their biotechnological utilization to develop new added value products  
 AUTHOR(S): Coello, N.; Bernal, C.; Bertsch, A.; Estrada, O.; Mocco, Y.; Hasegawa, M.  
 CORPORATE SOURCE: Facultad de Ciencias, Laboratorio de Procesos Bioteconologicos. IBE, Venez.  
 SOURCE: Revista de la Facultad de Ingenieria, Universidad Central de Venezuela (2003), 18(3), 119-126  
 CODEN: RFIVFQ; ISSN: 0798-4065  
 PUBLISHER: Facultad de Ingenieria de la Universidad Central de Venezuela  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Spanish

AB Feathers are a poultry byproduct rich in protein (mainly keratin), generated in very large amts. as a waste product from the poultry- **processing** industry. This research was conducted on LPB-3 bacterial strain of Kocuria rosea isolated from soil, to determine their potential use to produce fermented feather meal, enzymes and carotenoid pigments in feathers submerged fermentation Under these conditions: (1) K. rosea excretes  $\geq 2$  proteolytic activities, able to degrade keratin, collagen and elastin; and (2) the feather meal enriched with cells of K. rosea mainly contains protein (67%), with an in vitro digestibility (88%) similar to the value of the com. non-fermented feather meal. The bacterial cells incorporated into the final product improve the content of essential amino acids lysine, histidine and methionine. From the spectrometric data it was detected that this bacterium synthesizes an orange-pink carotenoid pigment **astaxanthin**, that may be useful in alimentary industry for increase color of some foods and salmonids **feed** in aquaculture operations.

CC 17-12 (Food and Feed Chemistry)

Section cross-reference(s): 60

ST feather agroindustrial waste biotechnol **feed**

IT Feather

#### **Feed**

Kocuria rosea

Solid wastes

(feather **processing** for meal production)

IT Amino acids, biological studies

RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(feather **processing** for meal production)

IT 56-87-1, Lysine, biological studies 63-68-3, Methionine, biological studies 71-00-1, Histidine, biological studies **472-61-7**,

#### **Astaxanthin**

RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(feather **processing** for meal production)

#### RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Association of Official	1990		69	Official Methods of	
BASF	2002			Leather topics and t	
Bockle, B	1995	61	3705	Applied Environmental	MEDLINE
Bradford, M	1976	72	278	Annals of Biochemist	
Bressollier, P	1999	65	2570	Applied and Environm	HCAPLUS
COVENIN	1981			Norma No 1728; Deter	
Chattopadhyay, M	1997	239	85	Biochemical and Biop	HCAPLUS
Coello, N	2001		165	Focus on Biotechnolo	HCAPLUS

Cooney, J	1981	27	421	Canadian Journal of	HCAPLUS
Crueger, W	1982			Biotechnology: A tex	
Elmayergi, H	1971	17	1067	Canadian Journal of	HCAPLUS
FENAVI Federacion Nacio				Informe 1995-2002	
Kunert, J	1989	29	597	Journal of Basic Mic	HCAPLUS
Kusdiyantini, E	1998	20	929	Biotechnology letter	HCAPLUS
Laemmlli, U	1970	227	680	Nature	HCAPLUS
Letourneau, F	1998	26	77	Letters in Applied M	HCAPLUS
Lorquin, J	1997	63	1151	Applied and Envirome	HCAPLUS
Lowe, D	2001		391	Basic Biotechnology,	
Meyer, P	1994	40	780	Applied Microbiology	HCAPLUS
Nelis, H	1991	70	181	Journal of Applied B	HCAPLUS
Nickerson, R	1961			US 2988488	HCAPLUS
Onifade, A	1998	66	1	Bioresource Technolo	HCAPLUS
Roche	2002			www.roche-vitamins.c	
Sandmann, G	1994	223	7	European Journal of	HCAPLUS
Santos, R	1996	33	364	Current Microbiology	HCAPLUS
Shih, J	1998			DNA encoding Bacillu	
Stradi, R	1995	110 B	131	Comparative Biochemi	
Stradi, R	1996	113B	427	Comparative Biochemi	HCAPLUS
Stradi, R	2001	128	529	Comparative Biochemi	MEDLINE
Stradi, R	1995	670	337	Journal of Chromatog	HCAPLUS
Wang, X	1997	76	491	Poultry Science	MEDLINE
Ward, O	1985		789	Comprehensive Biotec	
Williams, C	1990	56	1509	Applied Environmental	HCAPLUS
Williams, C	1991	70	85	Poultry Science	HCAPLUS

L87 ANSWER 9 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:496823 HCAPLUS Full-text

DOCUMENT NUMBER: 142:37265

TITLE: Utilizing maize cobs as fermentation substrate to produce **astaxanthin**-rich **feed** grade yeast by *Phaffia rhodozyma*

AUTHOR(S): Liang, Xinle; Zhang, Hong

CORPORATE SOURCE: Department of Biochemical Engineering, Hangzhou University of Commerce, Hangzhou, 310035, Peop. Rep. China

SOURCE: Zhongguo Liangyou Xuebao (2003), 18(5), 85-88

CODEN: ZLXUFO; ISSN: 1003-0174

PUBLISHER: Zhongguo Liangyou Xuebao Bianjibu

DOCUMENT TYPE: Journal

LANGUAGE: Chinese

AB Maize cob was a cheap and vast expanded byproduct of agriculture. After pretreatment with ammonia (8%, w/v), sodium hydroxide (4%, w/v) and dilute acid, the cobs were hydrolyzed by using cellulase and xylanase **preps**. to liberate reducing sugars. The yeast *Phaffia rhodozyma* can utilize these sugars as substrate for cell growth and **astaxanthin** synthesis. The expts. suggested that an initial sugar concentration of 2% (w/v), plus peptone or fish meal improved the yeast growth and **astaxanthin** accumulation. Different C/N ratio (Glucose/Ammonium sulfate) influenced the yeast growth and **astaxanthin** yield at different level. In a 5-L fermentor batch cultivation, biomass at 3.3g/L (dry cell weight) and **astaxanthin** yield at 2.7mg/L were obtained.

CC 17-12 (Food and Feed Chemistry)

ST corncob enzymic hydrolysis **feed** yeast **astaxanthin** *Phaffia fermn*

IT Fermentation

(batch; utilizing maize cobs as fermentation substrate to produce **feed** yeast rice in **astaxanthin** by *Phaffia rhodozyma*

- after hydrolysis)
- IT Hydrolysis  
(enzymic; utilizing maize cobs as fermentation substrate to produce **feed** yeast rice in **astaxanthin** by *Phaffia rhodozyma* after hydrolysis)
- IT Fish  
(meal; utilizing maize cobs as fermentation substrate to produce **feed** yeast rice in **astaxanthin** by *Phaffia rhodozyma* after hydrolysis)
- IT **Corncob**  
**Feed**  
*Phaffia rhodozyma*  
(utilizing maize cobs as fermentation substrate to produce **feed** yeast rice in **astaxanthin** by *Phaffia rhodozyma* after hydrolysis)
- IT Peptones  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(utilizing maize cobs as fermentation substrate to produce **feed** yeast rice in **astaxanthin** by *Phaffia rhodozyma* after hydrolysis)
- IT **472-61-7, Astaxanthin**  
RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(utilizing maize cobs as fermentation substrate to produce **feed** yeast rice in **astaxanthin** by *Phaffia rhodozyma* after hydrolysis)
- IT 50-99-7, D-Glucose, biological studies 1310-73-2, Sodium hydroxide, biological studies 7664-93-9, Sulfuric acid, biological studies 7783-20-2, Ammonium sulfate, biological studies 9012-54-8, Cellulase 14798-03-9, Ammonium, biological studies 37278-89-0, Xylanase  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(utilizing maize cobs as fermentation substrate to produce **feed** yeast rice in **astaxanthin** by *Phaffia rhodozyma* after hydrolysis)

L87 ANSWER 10 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:527541 HCAPLUS Full-text

DOCUMENT NUMBER: 138:186734

TITLE: Lactic acid fermentation of wheat and barley whole meal flours improves digestibility of nutrients and energy in Atlantic salmon (*Salmo salar* L.) diets

AUTHOR(S): Skrede, G.; Storebakken, T.; Skrede, A.; Sahlstrom, S.; Sorensen, M.; Shearer, K. D.; Slinde, E.

CORPORATE SOURCE: MATFORSK (Norwegian Food Research Institute), Aas, N-1430, Norway

SOURCE: Aquaculture (2002), 210(1-4), 305-321

CODEN: AQCLAL; ISSN: 0044-8486

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The effects of lactic acid fermentation of wheat and barley whole meal flours (WMF) on digestibility parameters in Atlantic salmon were studied. The WMFs were inoculated with a specific *Lactobacillus* strain and fermented for 16 h at 30 °C prior to mixing with other **feed** ingredients and **processing** by extrusion. Fermentation of the WMFs significantly decreased total starch ( $P < 0.01$ ) and total mixed-linked (1→3)(1→4)- $\beta$ -glucan ( $P < 0.001$ ) contents in both cereals. Soluble  $\beta$ -glucans decreased ( $P < 0.001$ ) from 25.2 to 12.0 g kg<sup>-1</sup> dry matter in barley WMF during fermentation. In Experiment 1, where diets with 24% untreated wheat or barley WMF and 12%, 24%, or 36% fermented WMFs were fed to Atlantic salmon (0.5 kg) for 25 days, there were indications of improved starch and fat digestibility by fermentation. Experiment 2 comprised diets

containing 24% untreated or fermented wheat or barley WMFs fed to each of triplicate groups of Atlantic salmon (0.5 kg) during a 17-day exptl. period. This experiment showed that protein ( $P<0.001$ ), fat ( $P<0.05$ ) and energy ( $P<0.001$ ) were more efficiently digested in diets with wheat than in diets with barley. Apparent digestibility of starch was greatly improved by fermentation ( $P<0.001$ ), more in barley diets (from 47.5% to 67.0%) than in wheat diets (from 51.7% to 65.4%). Improvements in digestibility of fat ( $P<0.05$ ) and energy ( $P<0.001$ ) were obtained by fermenting the cereals. The absorption of Na was higher for salmon fed wheat than barley diets ( $P<0.05$ ). Fermentation resulted in improved Na absorption ( $P<0.01$ ); from 68.8% to 73.2% for wheat diets and from 60.3% to 71.7% for barley diets. Fermentation caused a significant ( $P<0.05$ ) improvement in Zn absorption from 32.7% to 40.5% for wheat diets and from 33.2% to 43.5% for barley diets. This may be related to the significant reduction in phytic acid levels seen in both fermented cereals ( $P<0.001$ ). In conclusion, the potential of wheat and especially barley as ingredients in salmon diets is greatly improved by fermentation

CC 17-12 (Food and Feed Chemistry)

ST Lactobacillus wheat barley flour fermn salmon **feed** digestibility

IT **Flours and Meals**

(barley, whole grain; lactic acid fermentation of wheat and barley whole meal

flours improves digestibility of nutrients and energy in Atlantic salmon diets)

IT Digestibility

**Feed**

Lactobacillus

Salmo salar

(lactic acid fermentation of wheat and barley whole meal flours improves digestibility of nutrients and energy in Atlantic salmon diets)

IT **Wheat flour**

(whole grain; lactic acid fermentation of wheat and barley whole meal flours

improves digestibility of nutrients and energy in Atlantic salmon diets)

IT 50-99-7, Dextrose, biological studies 57-50-1, Sucrose, biological studies 83-86-3, Phytic acid **472-61-7, Astaxanthin**

7439-89-6, Iron, biological studies 7439-95-4, Magnesium, biological studies 7439-96-5, Manganese, biological studies 7440-09-7, Potassium, biological studies 7440-23-5, Sodium, biological studies 7440-50-8, Copper, biological studies 7440-66-6, Zinc, biological studies 7440-70-2, Calcium, biological studies 7723-14-0, Phosphorus, biological studies 9005-25-8, Starch, biological studies 9041-22-9,  $\beta$ -Glucan 20298-94-6 27121-72-8 88269-39-0

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(lactic acid fermentation of wheat and barley whole meal flours improves digestibility of nutrients and energy in Atlantic salmon diets).

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
AOAC Association of Off	1980		125	Official Methods of	
AOAC Association of Off	1990		1105	Official Methods of	
Aksnes, A	1995	1	241	Aquacult Nutr	
Almirall, M	1995	125	947	J Nutr	HCAPLUS
Arnesen, P	1995	1	151	Aquacult Nutr	
Arnesen, P	1993	118	105	Aquaculture	HCAPLUS
Arnesen, P	1993	105B	541	Comp Biochem Physiol	HCAPLUS
Austreng, E	1978	13	265	Aquaculture	
Austreng, E	2000	188	65	Aquaculture	HCAPLUS
Autio, K	1996		227	Carbohydrates in Foo	HCAPLUS

Bergh, M	1999	78	215	Anim Feed Sci Techno	HCAPLUS
Bergot, F	1983	34	203	Aquaculture	HCAPLUS
Bjerkeng, B	1997	157	297	Aquaculture	
Bjorck, I	1996		505	Carbohydrates in Foo	
Cheeke, P	1999		523	Feed and Feeding, 2n	
Cheeke, P	1998		479	Natural Toxicants in	
Einen, O	1997	3	115	Aquacult Nutr	
Eliasson, A	1993			Cereals in Breadmaki	
Fox, P	1982	V	107	Advances in Cereal S	
Grisdale-Helland, B	1997	152	167	Aquaculture	HCAPLUS
Hemre, G	1995	1	37	Aquacult Nutr	HCAPLUS
Hemre, G	1995	1	69	Aquacult Nutr	HCAPLUS
Hemre, G	2000	6	229	Aquacult Nutr	HCAPLUS
Hemre, G	1995	26	149	Aquacult Res	
Hesselman, K	1986	15	83	Anim Feed Sci Techno	HCAPLUS
Hoseney, R	1994		29	Principles of Cereal	
Lei, X	1997	69	12	Feedstuffs	
Lopez, Y	1983	48	953	J Food Sci	HCAPLUS
Marklinder, I	1995	12	363	Food Microbiol	HCAPLUS
Marklinder, I	1995	12	487	Food Microbiol	HCAPLUS
Marklinder, I	1996	7	285	Food Qual Preference	
Ostergard, K	1989	34	215	Food Chem	
Palmer, G	1989		61	Cereal Science and T	
Rasmussen, S	1998	129	107	Hereditas	HCAPLUS
Refstie, S	1999	79	331	Anim Feed Sci Techno	HCAPLUS
Refstie, S	1997	153	263	Aquaculture	
Robertson, J	1997	25	275	J Cereal Sci	HCAPLUS
Sharma, D	1988	21	435	Can Inst Food Sci Te	HCAPLUS
Siljestrom, M	1986	4	315	J Cereal Sci	
Skoglund, E	1998	46	1877	J Agric Food Chem	HCAPLUS
Skrede, G	2001	90	199	Anim Feed Sci Techno	HCAPLUS
Slinde, E	2001			EP 0837636	HCAPLUS
Sorensen, M	1995			MSc Thesis, Agricult	
Stone, F	1984	35	513	J Sci Food Agric	HCAPLUS
Storebakken, T	1985	47	11	Aquaculture	
Storebakken, T	1987	60	121	Aquaculture	HCAPLUS
Storebakken, T	1998	163	347	Aquaculture	HCAPLUS
Storebakken, T	1998	161	365	Aquaculture	HCAPLUS
Storebakken, T	2000	184	115	Aquaculture	HCAPLUS
Storebakken, T	2002		79	Nutrient Requirement	
Svihus, B	1995	45	252	Acta Agric Scand	
Theander, O	1987	3	88	Starch/Staerke	
Thodesen, J	1998	4	123	Aquacult Nutr	
Wang, W	1993	70	712	Cereal Chem	HCAPLUS

L87 ANSWER 11 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:283731 HCAPLUS Full-text

DOCUMENT NUMBER: 134:265593

TITLE: Fish **feed** with increased nucleotide content

INVENTOR(S): Burrells, Charles; Williams, Paul David

PATENT ASSIGNEE(S): Ewos Limited, UK

SOURCE: PCT Int. Appl., 15 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE

WO 2001026481 A1 20010419 WO 2000-GB3899 20001011 <--  
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU,  
CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,  
IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,  
MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,  
SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW  
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,  
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,  
CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG  
CA 2382636 A1 20010419 CA 2000-2382636 20001011 <--  
EP 1220617 A1 20020710 EP 2000-966321 20001011 <--  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, LT, LV, FI, RO, MK, CY, AL  
JP 2003511051 T 20030325 JP 2001-529280 20001011 <--  
AU 770961 B2 20040311 AU 2000-76762 20001011 <--  
NZ 518305 A 20040827 NZ 2000-518305 20001011 <--  
NO 2002001734 A 20020412 NO 2002-1734 20020412 <--  
US 6987095 B1 20060117 US 2002-110842 20020806 <--  
PRIORITY APPLN. INFO.: GB 1999-24096 A 19991013 <--  
GB 2000-9853 A 20000425 <--  
WO 2000-GB3899 W 20001011 <--  
AB A method of enhancing the uptake of **feed** additives and pigmentation for coloring the flesh was provided. This method is effected through enhancing the development of the intestinal tract. Specifically the present method comprises of **feeding** fish with a diet which has an augmented level of nucleotides present therein. The nucleotides may be selected from the group consisting of uracil, guanine, cytosine, thymine, adenine and mixts. The resultant improvement in the development of the intestinal tract leads to an improvement of the intestinal surfaces to absorb nutrients and/or dietary additives, this increase being at least partly due to an increase in gut surface area, for example through an increase in villus height.  
IC ICM A23K001-16  
ICS A23K001-18; A61K031-505; A61K031-52; A61P001-00  
CC **17-12** (Food and Feed Chemistry)  
Section cross-reference(s): 12  
ST fish **feed** nucleotide intestine absorption pigmentation  
IT Antibiotics  
Drugs  
**Feed**  
**Feed** additives  
Fish  
Intestine  
Pigments, biological  
Vaccines  
(fish **feed** with increased nucleotide content)  
IT Nucleotides, biological studies  
Vitamins  
RL: BPR (Biological process); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); **PROC (Process)**;  
USES (Uses)  
(fish **feed** with increased nucleotide content)  
IT Biological transport  
(uptake; fish **feed** with increased nucleotide content)  
IT Intestine  
(villus; fish **feed** with increased nucleotide content)  
IT 65-71-4, Thymine 66-22-8, Uracil, biological studies 71-30-7, Cytosine 73-24-5, Adenine, biological studies 73-40-5, Guanine **472-61-7**  
, **Astaxanthin**  
RL: BPR (Biological process); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); **PROC (Process)**;



## USES (Uses)

(fish **feed** with increased nucleotide content)

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Chu, F	1998			US 5776490 A	HCAPLUS
Fernando, K	1997	148	191	AQUACULTURE	
Gary, L	1992	108	97	AQUACULTURE	
Mamoto, K	1993			US 5188851 A	HCAPLUS
Nippon Seishi Kk	1995			JP 07184595 A	HCAPLUS
Nisshin Flour Milling C	1987			JP 62029530 A	
Ollevier, F	1997			WO 9740702 A	HCAPLUS
Oregon State	1996			WO 9611707 A	HCAPLUS
Takeda Chem Ind Ltd	1982			JP 57012972 A	HCAPLUS

L87 ANSWER 12 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:712786 HCAPLUS Full-text

DOCUMENT NUMBER: 135:241287

TITLE: Biopolymers and their production from food byproducts.

INVENTOR(S): Schoerken, Ulrich; Weiss, Albrecht; Kuhlmann, Kerstin;  
Horlacher, Peter

PATENT ASSIGNEE(S): Cognis Deutschland GmbH, Germany

SOURCE: Ger. Offen., 8 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10014997	A1	20010927	DE 2000-10014997	20000325 <--
WO 2001072140	A2	20011004	WO 2001-EP3024	20010316 <--
WO 2001072140	A3	20020919		
W: JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				

PRIORITY APPLN. INFO.: DE 2000-10014997 A 20000325 &lt;--

AB Biopolymers with a protein content of maximally 1% and calcium content of maximally 1% (by weight) are obtained by demineralizing chitin-containing raw materials in the presence of biol. degradable complexing agents and proteases and a **procedure** for their production is described. The **procedure** utilizes food wastes.

IC ICM C08B037-08

ICS C12S003-02; C12S003-14; A23K001-00; C07K001-14

CC 17-12 (Food and Feed Chemistry)

Section cross-reference(s): 62, 63

ST food waste chitin degrdn proteinase biopolymer; demineralization food waste biopolymer manuf; **feed** additive seafood waste proteinase

IT Cosmetics

Demineralization

**Feed** additivesHair **preparations**

Health products

Protein degradation

Skin **preparations** (pharmaceutical)

(biopolymers and their production from food byproducts.)

IT Protein hydrolyzates

RL: FFD (Food or feed use); IMF (Industrial manufacture); BIOL (Biological

- study); **PREP (Preparation)**; USES (Uses)  
 (biopolymers and their production from food byproducts.)
- IT Proteins, general, biological studies  
 RL: FFD (Food or feed use); REM (Removal or disposal); BIOL (Biological study); **PROC (Process)**; USES (Uses)  
 (biopolymers and their production from food byproducts.)
- IT Biopolymers  
 RL: IMF (Industrial manufacture); **PREP (Preparation)**  
 (biopolymers and their production from food byproducts.)
- IT **Feed**  
 (fish; biopolymers and their production from food byproducts.)
- IT Wastes  
 (food-**processing**; biopolymers and their production from food byproducts.)
- IT Crustacean (Crustacea)  
 Food **processing**  
 Mollusk (Mollusca)  
 Seafood  
 Shrimp  
 (wastes; biopolymers and their production from food byproducts.)
- IT **472-61-7, Astaxanthin**  
 RL: BOC (Biological occurrence); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); OCCU (Occurrence); USES (Uses)  
 (biopolymers and their production from food byproducts.)
- IT 1398-61-4, Chitin  
 RL: BPR (Biological process); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); **PROC (Process)**; USES (Uses)  
 (biopolymers and their production from food byproducts.)
- IT 9012-76-4DP, Chitosan, derivs. 9012-76-4P, Chitosan  
 RL: FFD (Food or feed use); IMF (Industrial manufacture); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)  
 (biopolymers and their production from food byproducts.)
- IT 7440-70-2, Calcium, biological studies  
 RL: FFD (Food or feed use); REM (Removal or disposal); BIOL (Biological study); **PROC (Process)**; USES (Uses)  
 (biopolymers and their production from food byproducts.)

L87 ANSWER 13 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2000:756471 HCAPLUS Full-text  
 DOCUMENT NUMBER: 133:295730  
 TITLE: Pigment [**astaxanthin** diester-based for **feeding** salmonids]  
 INVENTOR(S): Breivik, Harald; Sanna, Lola Irene; Aanesen, Berit Annie  
 PATENT ASSIGNEE(S): Norsk Hydro Asa, Norway  
 SOURCE: PCT Int. Appl., 19 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000062625	A1	20001026	WO 2000-NO129	20000417 <--
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,				

MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,  
 SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW  
 RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE,  
 DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,  
 CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

NO 9901857 A 20001020 NO 1999-1857 19990419 <--  
 NO 309386 B1 20010122  
 CA 2369800 A1 20001026 CA 2000-2369800 20000417 <--  
 EP 1171002 A1 20020116 EP 2000-921189 20000417 <--  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO  
 AU 759161 B2 20030410 AU 2000-41532 20000417 <--  
 RU 2237072 C2 20040927 RU 2001-130983 20000417 <--  
 US 6709688 B1 20040323 US 2002-959238 20020204 <--  
 PRIORITY APPLN. INFO.: NO 1999-1857 A 19990419 <--  
 WO 2000-NO129 W 20000417 <--

AB This invention relates to a new pigment in **feed** for salmonids, a new **feed** comprising this pigment and use of this pigment. The pigment comprises a diester of **astaxanthin prepared** with an omega-3 fatty acid and/or a short chain carboxylic acid. By this invention a pigment for **feed** to salmonides that is more stable and biol. more effective than free **astaxanthin** and com. available **astaxanthin** products, is provided.

IC ICM A23K001-16  
 ICS A23K001-18

CC 17-12 (Food and Feed Chemistry)  
 Section cross-reference(s): 18

ST **astaxanthin** diester pigment **feed** salmonid

IT **Feed** additives  
 Fillers  
 Food preservatives  
 Oncorhynchus mykiss  
 Salmon  
 Salmonidae  
 (**astaxanthin** diester pigment for **feeding** salmonids)

IT Carbohydrates, biological studies  
 Lipids, biological studies  
 Mineral elements, biological studies  
 Proteins, general, biological studies  
 Vitamins  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (**astaxanthin** diester pigment for **feeding** salmonids)

IT Adhesives  
 (**feed; astaxanthin** diester pigment for **feeding** salmonids)

IT Fatty acids, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (polyunsatd., omega-3; **astaxanthin** diester pigment for **feeding** salmonids)

IT Pigments, biological  
 (red; **astaxanthin** diester pigment for **feeding** salmonids)

IT **Feed**  
 (salmonid; **astaxanthin** diester pigment for **feeding** salmonids)

IT Fatty acids, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (short-chain; **astaxanthin** diester pigment for **feeding** salmonids)

IT 472-61-7D, **Astaxanthin**, fatty acid diesters  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(**astaxanthin** diester pigment for **feeding** salmonids)  
 IT 334-48-5, Decanoic acid 6217-54-5, Cervonic acid 10417-94-4,  
 Timnodonic acid  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (**astaxanthin** diester pigment for **feeding** salmonids)

L87 ANSWER 14 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1999:594867 HCAPLUS Full-text  
 DOCUMENT NUMBER: 131:198862  
 TITLE: Fish fodder for breeding purposes, in the form of a  
 diet, and a **feeding procedure**  
 INVENTOR(S): Koppe, Wolfgang M.  
 PATENT ASSIGNEE(S): Nutreco Aquaculture Research Centre AS, Norway  
 SOURCE: PCT Int. Appl., 18 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9945796	A1	19990916	WO 1999-NO51	19990217 <--
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
NO 9801035	A	19990913	NO 1998-1035	19980310 <--
CA 2322814	A1	19990916	CA 1999-2322814	19990217 <--
CA 2322814	C	20031014		
AU 9925525	A	19990927	AU 1999-25525	19990217 <--
AU 739550	B2	20011018		
EP 1067844	A1	20010117	EP 1999-905368	19990217 <--
EP 1067844	B1	20030709		
R: DE, ES, FR, GB, IT, SE, IE, FI				
NZ 506966	A	20020726	NZ 1999-506966	19990217 <--
US 6337096	B1	20020108	US 2000-623830	20001109 <--
PRIORITY APPLN. INFO.:			NO 1998-1035	A 19980310 <--
			WO 1999-NO51	W 19990217 <--

AB In a fish fodder for breeding purposes, in the form of a diet containing protein and fat as well as one or more agents to favor the visual pigmentation of the fillets in the form of desired pink coloring, one has experienced improved pigmentation results from diet fodder containing a lysine concentration of at least 8.6 % of the protein in the diet fodder. In a **procedure** of **feeding** associated to this diet fodder, the **feeding** with diet fodder is restricted to a brief period of time in the order 4-8 wk immediately before the slaughtering point of time.

IC ICM A23K001-16

ICS A23K001-18

CC 17-12 (Food and Feed Chemistry)

ST fish breeding **feed** lysine carotenoid

IT Breeding, animal

**Feed**

**Feeding** techniques

Fish

Salmo salar

Salmonidae

(fish fodder for breeding purposes, in the form of a diet, and a  
**feeding procedure**)

IT Carotenes, biological studies

RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL  
(Biological study); **PROC (Process)**(fish fodder for breeding purposes, in the form of a diet, and a  
**feeding procedure**)

IT Pigments, biological

(fish; fish fodder for breeding purposes, in the form of a diet, and a  
**feeding procedure**)

IT 56-87-1, L-Lysine, biological studies

RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL  
(Biological study); **PROC (Process)**(fish fodder for breeding purposes, in the form of a diet, and a  
**feeding procedure**)

IT 472-61-7, Astaxanthin

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(fish fodder for breeding purposes, in the form of a diet, and a  
**feeding procedure**)

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Kansas State University	1994			WO 9421141 A1	HCAPLUS
Ni Suisan, K				JP 19760203	
Ni Suisan, K				JP 51013696	
Ni Suisan, K				Fish-breeding feed p	
Nippon Paint Co Ltd				JP 19790216	
Nippon Paint Co Ltd				JP 54020889	
Nippon Paint Co Ltd				Fish feedstuff prepn	
Unilever Plc	1992			WO 9201754 A1	HCAPLUS

L87 ANSWER 15 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:262143 HCAPLUS Full-text

DOCUMENT NUMBER: 130:281205

TITLE: Production of pigmented **feed** by using  
microorganism with a starch-rich substrate

INVENTOR(S): Kouzeh, Matt; Laros, Johannes Jacobus

PATENT ASSIGNEE(S): Penta Participatiemaatschappij B.V., Neth.

SOURCE: PCT Int. Appl., 17 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9918810	A1	19990422	WO 1998-NL555	19980925 <--
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
NL 1007240	A1	19990415	NL 1997-1007240	19971009 <--

NL 1007240 C2 19990427  
 AU 9891909 A 19990503 AU 1998-91909 19980925 <--  
 PRIORITY APPLN. INFO.: NL 1997-1007240 A 19971009 <--  
 WO 1998-NL555 W 19980925 <--

AB Pigmented **feed** is produced by incubating a pigment-producing microorganism with a starch-rich substrate; the starch-rich material, insofar as it has not been consumed by the microorganism, is added to the **feed** together with the pigment thus produced. Thus, *Phaffia rhodozyma* is added to extruded corn flour to produce **astaxanthin** for fish **feed**.

IC ICM A23K001-16

ICS A23K001-18; C12N001-22; C12P023-00; A23N017-00

CC 17-12 (Food and Feed Chemistry)

ST **feed** pigment microorganism starch; **astaxanthin**

**feed** *Phaffia* corn flour

IT **Flours and Meals**

(corn; production of pigmented **feed** by using microorganism with starch-rich substrate)

IT Fish

(**feed**; production of pigmented **feed** by using microorganism with starch-rich substrate)

IT Corn

(flour; production of pigmented **feed** by using microorganism with starch-rich substrate)

IT Cereal (grain)

**Feed**

Microorganism

*Phaffia rhodozyma*

Pigments, biological

(production of pigmented **feed** by using microorganism with starch-rich substrate)

IT 472-61-7P, **Astaxanthin**

RL: BPN (Biosynthetic preparation); FFD (Food or feed use); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)

(production of pigmented **feed** by using microorganism with starch-rich substrate)

IT 9005-25-8, Starch, biological studies

RL: BPR (Biological process); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); **PROC (Process)**;

USES (Uses)

(production of pigmented **feed** by using microorganism with starch-rich substrate)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Danisco Bioteknologi As	1988			WO 8808025 A	HCAPLUS
Danochemo As	1991			WO 9106292 A	HCAPLUS
Evans, G	1991			US 4997765 A	HCAPLUS
Nippon Shokuhin Kako Kk				JP 01071474 A	HCAPLUS
Nissho Denzai Kk				JP 63148981 A	
Phillips Petroleum Co	1991			EP 0454024 A	HCAPLUS
Rashbaum, S	1983			US 4418081 A	HCAPLUS
Unilever Nv	1991			EP 0425007 A	HCAPLUS
Unilever Plc	1991			EP 0425213 A	HCAPLUS
Yongsmith, B	1993	9	85	WORLD JOURNAL OF MIC	HCAPLUS

L87 ANSWER 16 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:141012 HCAPLUS Full-text

DOCUMENT NUMBER: 130:209109

TITLE: **Preparation of astaxanthin**

INVENTOR(S): -containing Haematococcus  
Furubayashi, Makio; Kurimura, Yoshio; Hirano, Yoko;  
Tsuji, Yasunobu  
PATENT ASSIGNEE(S): Higashimaru Shoyu K. K., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11056346	A	19990302	JP 1997-246166	19970827 <--
JP 3844855	B2	20061115		

PRIORITY APPLN. INFO.: JP 1997-246166 19970827 <--

AB **Astaxanthin**-containing Haematococcus is noninvasively **prepd** . by extraction with acetone under elevated temperature The chlorophylls are selectively removed. Optionally enzyme and drying treatment are used to **prepare** the **astaxanthin**-containing Haematococcus. The **astaxanthin**-containing Haematococcus is useful for **feed**, bait, and cosmetics, and pharmaceuticals.

IC ICM C12N001-12  
ICS C09B061-00; A23K001-16; A23K001-18; A23L001-272; C12N001-12; C12R001-89

CC 17-12 (Food and Feed Chemistry)

ST **astaxanthin** contg Haematococcus manuf; **feed**  
Haematococcus **astaxanthin**

IT Haematococcus  
(**astaxanthin**-containing; **preparation** of **astaxanthin**  
-containing Haematococcus)

IT **Feed**  
Haematococcus pluvialis  
(**preparation** of **astaxanthin**-containing Haematococcus)

IT Chlorophylls, **processes**  
RL: REM (Removal or disposal); **PROC (Process)**  
(**preparation** of **astaxanthin**-containing Haematococcus)

IT **472-61-7, Astaxanthin**  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(Haematococcus rich in; **preparation** of **astaxanthin**  
-containing Haematococcus)

IT 67-64-1, Acetone, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(hot; **preparation** of **astaxanthin**-containing Haematococcus)

L87 ANSWER 17 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 1998:293332 HCAPLUS Full-text  
DOCUMENT NUMBER: 129:4048  
TITLE: Use of an enzyme for promoting pigment uptake from a  
**feed**  
INVENTOR(S): Bedford, Michael Richard; Feord, Jean Catherine;  
Aranda, Julian Oscar Garcia; Morgan, Andrew John  
PATENT ASSIGNEE(S): Finnfeeds International Ltd., UK  
SOURCE: PCT Int. Appl., 26 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 9818345      A1      19980507      WO 1997-EP5964      19971029 <--
W:  AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
    DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR,
    KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ,
    PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG,
    US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW:  GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR,
    GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA,
    GN, ML, MR, NE, SN, TD, TG
AU 9851214      A      19980522      AU 1998-51214      19971029 <--
PRIORITY APPLN. INFO.:      GB 1996-22505      A 19961029 <--
                                GB 1997-810      A 19970116 <--
                                WO 1997-EP5964      W 19971029 <--

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AB Provided is the use of an enzyme selected from a carbohydrase and/or protease as a component of a non-viscous **animal feed** for promoting the absorption of pigments present in the **feed**. Non-viscous **animal feeds** are based on cereals such as sorghum, rice and maize, on oilseeds such as soya, canola and rapeseed, or on root crops such as tapioca and cassava. The pigments may be either present naturally in the **feed** or added to the **feed** and include such carotenoid pigments as **astaxanthin**, canthaxanthin, lutein, zeaxanthin and  $\beta$ -apo-8'-carotenal. Also provided is a non-viscous **animal feed** and a method for increasing the bio-availability of a pigment present in an **animal feed** by incorporating  $1 \times 10^{-6}$  - 1 % by weight of a carbohydrase and/or a protease into the **feed**.

IC ICM A23K001-16

ICS A23K001-18

CC 17-12 (Food and Feed Chemistry)

ST chicken trout **feed** carotenoid pigment

IT Bean (Phaseolus vulgaris)

Cassava (Manihot esculenta)

Chicken (Gallus domesticus)

Corn

**Feed**

Flax

Lupine (Lupinus)

Millet

Pea

Rice (Oryza sativa)

Sorghum

Trout

(use of an enzyme for promoting pigment uptake from a **feed**)

IT Carotenes, biological studies

RL: BPR (Biological process); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); **PROC (Process)**;

USES (Uses)

(use of an enzyme for promoting pigment uptake from a **feed**)

IT Canola oil

Peanut oil

Rape oil

Safflower oil

Soybean oil

Sunflower oil

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(use of an enzyme for promoting pigment uptake from a **feed**)

IT 9000-92-4, Amylase 9001-02-9, Carbohydrase 9001-92-7, Protease

9012-54-8, Cellulase 9025-35-8,  $\alpha$ -Galactosidase 9032-75-1,

Pectinase 9074-98-0,  $\beta$ -Glucanase 9075-53-0, Polysaccharidase

37278-89-0, Xylanase 60748-69-8, Mannanase



RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(use of an enzyme for promoting pigment uptake from a **feed**)

IT 127-40-2, Lutein 127-40-2D, Xanthophyll, deriv 144-68-3, Zeaxanthin 465-42-9, Capsanthin 470-38-2, Capsorubin **472-61-7**, **Astaxanthin** 502-65-8, Lycopene 514-78-3, Canthaxanthin 1107-26-2,  $\beta$ -Apo-8'-carotenal 1109-11-1,  $\beta$ -Apo-8'-carotenoic acid ethyl ester 6983-79-5, Bixin 7235-40-7,  $\beta$ -Carotene

RL: BPR (Biological process); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); **PROC (Process)**;

USES (Uses)

(use of an enzyme for promoting pigment uptake from a **feed**)

# RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Aneja, R	1979			US 4141994 A	HCAPLUS
Ewos Ab	1995			EP 0682874 A	HCAPLUS
Finnfeeds Int Ltd	1996			WO 9605739 A	HCAPLUS
Norsk Hydro Technology	1993			EP 0574974 A	HCAPLUS
Novonordisk As	1991			WO 9104673 A	HCAPLUS
Odess Food Ind Tech	1991			SU 1629008 A	HCAPLUS
Storebakken, T	1992	100	209	AQUACULTURE	HCAPLUS

L87 ANSWER 18 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:756972 HCAPLUS Full-text

DOCUMENT NUMBER: 128:34069

TITLE: Method for producing **feed** pellets

INVENTOR(S): Nissinen, Vesa Juhani; Ohnstad, Vebjorn

PATENT ASSIGNEE(S): Ewos Limited, UK; Nissinen, Vesa Juhani; Ohnstad, Vebjorn

SOURCE: PCT Int. Appl., 16 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9742838	A1	19971120	WO 1997-EP2074	19970423 <--
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
GB 2313035	A	19971119	GB 1996-10114	19960515 <--
GB 2313035	B	19990721		
AU 9727692	A	19971205	AU 1997-27692	19970423 <--
EP 839004	A1	19980506	EP 1997-921724	19970423 <--
EP 839004	B1	20020828		
R: DE, DK, ES, FR, GB, IT, IE				
JP 11509426	T	19990824	JP 1997-540426	19970423 <--
ES 2180047	T3	20030201	ES 1997-921724	19970423 <--
NO 9800131	A	19980316	NO 1998-131	19980112 <--
PRIORITY APPLN. INFO.:			GB 1996-10114	A 19960515 <--

AB A method is provided for producing **feed** pellets loaded with a bioactive ingredient which is initially provided with a protective shell which has been coated around the bioactive ingredient. The **process** comprises a first step of removing the protective shell to liberate the bioactive ingredient. The resulting uncoated bioactive ingredient is mixed with a fat or oil. Finally, the resulting mixture is loaded into porous precursor **feed** pellets to produce **feed** pellets loaded with the bioactive ingredient and the fat or oil. The bioactive ingredient may be a pigment such as **astaxanthin**. This pigment is com. available coated with a shell formed from inter alia gelatin and carbohydrates. This shell can be removed enzymically using a proteolytic enzyme.

IC ICM A23K001-16  
ICS A23K001-18

CC 17-12 (Food and Feed Chemistry)

ST **feed** pellet prodn bioactive ingredient

IT Cooking  
(extrusion; method for producing **feed** pellets)

IT Fats and Glyceridic oils, biological studies  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(fish; method for producing **feed** pellets)

IT **Feed**  
Pellets  
Pigments, nonbiological  
Salmon  
(method for producing **feed** pellets)

IT Rape oil  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(method for producing **feed** pellets)

IT 514-78-3, Canthaxanthin  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(**Carophyll** Red; method for producing **feed** pellets)

IT 91-53-2, Ethoxyquin  
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(method for producing **feed** pellets)

IT 144-68-3, Zeaxanthin 472-61-7, **Astaxanthin**  
7235-40-7,  $\beta$ -Carotene 9014-01-1, Maxatase  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(method for producing **feed** pellets)

L87 ANSWER 19 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:756757 HCAPLUS Full-text

DOCUMENT NUMBER: 128:60951

TITLE: Method and apparatus for extracting **astaxanthin** from shells of shrimp and crab

INVENTOR(S): Fukuda, Kozo

PATENT ASSIGNEE(S): Nippon Kireeto K. K., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09301950	A	19971125	JP 1996-118591	19960514 <--
PRIORITY APPLN. INFO.:			JP 1996-118591	19960514 <--

AB Shells of shrimp and crab are soaked in HCl to remove Ca, and then immersed in a NaOH solution to neutralize and to remove proteins. The shells are immersed in 80 % ethanol, and **astaxanthin** is extracted from the solvent. The stepwise **process** for extracting **astaxanthin** is shown by a diagram. **Astaxanthin** is added to **feed** for fish, and the **feed** results in improving the color appearance of the fish.

IC ICM C07C403-14  
ICS B01D011-02

CC 17-12 (Food and Feed Chemistry)  
Section cross-reference(s): 12

ST **astaxanthin** extn shrimp crab shell **feed**

IT **Feed**  
Fish  
(**astaxanthin** from shells of shrimp and crab for fish **feed**)

IT Crab  
Shrimp  
(shell; **astaxanthin** from shells of shrimp and crab with ethanol for fish **feed**)

IT 472-61-7, **Astaxanthin**  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(**astaxanthin** from shells of shrimp and crab for fish **feed**)

IT 64-17-5, Ethanol, biological studies  
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)  
(**astaxanthin** from shells of shrimp and crab with ethanol for fish **feed**)

L87 ANSWER 20 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:601761 HCAPLUS Full-text

DOCUMENT NUMBER: 125:246152

TITLE: **Astaxanthin** suspension

INVENTOR(S): Moldt, Peter

PATENT ASSIGNEE(S): Neurosearch A/s, Den.

SOURCE: PCT Int. Appl., 10 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9623420	A1	19960808	WO 1996-EP373	19960130 <--
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE				
CA 2211107	A1	19960808	CA 1996-2211107	19960130 <--
AU 9647156	A	19960821	AU 1996-47156	19960130 <--
EP 812135	A1	19971217	EP 1996-902947	19960130 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV				
JP 10511270	T	19981104	JP 1996-523250	19960130 <--
FI 9702961	A	19970731	FI 1997-2961	19970711 <--
NO 9703473	A	19970728	NO 1997-3473	19970728 <--
PRIORITY APPLN. INFO.:			DK 1995-108	A 19950131 <--

AB A suspension of **astaxanthin** in oil and use thereof in the manufacture of **feed** for aquatic animals is disclosed.

IC ICM A23K001-16  
ICS A23K001-18; A23L001-275

CC 17-12 (Food and Feed Chemistry)

ST **feed** aquatic animal **astaxanthin**

IT **Feed**  
(aquatic animal; oil suspension of **astaxanthin** for use as aquatic **animal feed**)

IT Antioxidants  
Pigments  
(oil suspension of **astaxanthin** for use as aquatic **animal feed**)

IT Fats and Glyceridic oils  
RL: PEP (Physical, engineering or chemical process); **PROC** (**Process**)  
(oil suspension of **astaxanthin** for use as aquatic **animal feed**)

IT Animal  
(aquatic, oil suspension of **astaxanthin** for use as aquatic **animal feed**)

IT 472-61-7, **Astaxanthin**  
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study);  
USES (Uses)  
(oil suspension of **astaxanthin** for use as aquatic **animal feed**)

L87 ANSWER 21 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:169346 HCAPLUS Full-text

DOCUMENT NUMBER: 124:200718

TITLE: Manufacture of yeasts for **feeds** by pressure treatment

INVENTOR(S): Yamashita, Masahiko; Takahashi, Hiroki; Fujii, Masato; Morooka, Ken

PATENT ASSIGNEE(S): Mercian Corp, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08000257	A	19960109	JP 1994-160713	19940621 <--
PRIORITY APPLN. INFO.:			JP 1994-160713	19940621 <--

AB Yeasts for **feeds**, in which the availability of **astaxanthin** (I) is improved, are manufactured by pressure treatment of dried cells of *Phaffia rhodozyma*. The **feeds** are useful for color improvement of cultured fish, egg yolk, etc. *P. rhodozyma* Y-17-10 (FERM P-13638) was cultured in a medium containing malt extract, yeast extract, peptone, and glucose at 23° for 2 days, aerobically cultured in a medium containing glucose, yeast extract, and salts at 23° and pH .apprx.3 for 88 h, centrifuged, and the collected cells were dried and pressurized using a roll mill at 100 kg/cm<sup>2</sup>. The extraction rate of I from the cells by acetone was 80.4%, vs. 3.0% for that of the control without pressure treatment.

IC ICM C12N001-16  
ICS A23K001-16

ICI C12N001-16, C12R001-645  
 CC 17-12 (Food and Feed Chemistry)  
 Section cross-reference(s): 18  
 ST Phaffia pressurization **feed astaxanthin** availability  
 IT Chicken  
 (**feeding** experiment on; manufacture of yeasts for **feeds** by  
 pressure treatment of Phaffia rhodozyma for improvement of availability  
 of **astaxanthin**)  
 IT Egg yolk  
 (**feeds** for manufacture of; manufacture of yeasts for **feeds** by  
 pressure treatment of Phaffia rhodozyma for improvement of availability  
 of **astaxanthin**)  
 IT **Feed**  
 Phaffia rhodozyma  
 (manufacture of yeasts for **feeds** by pressure treatment of Phaffia  
 rhodozyma for improvement of availability of **astaxanthin**)  
 IT **Feeding** experiment  
 (on chickens; manufacture of yeasts for **feeds** by pressure  
 treatment of Phaffia rhodozyma for improvement of availability of  
**astaxanthin**)  
 IT 472-61-7, **Astaxanthin**  
 RL: AGR (Agricultural use); BPR (Biological process); BSU (Biological  
 study, unclassified); FFD (Food or feed use); BIOL (Biological study);  
**PROC (Process)**; USES (Uses)  
 (manufacture of yeasts for **feeds** by pressure treatment of Phaffia  
 rhodozyma for improvement of availability of **astaxanthin**)

L87 ANSWER 22 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1995:922208 HCAPLUS Full-text  
 DOCUMENT NUMBER: 123:312687  
 TITLE: **Feeds** containing **astaxanthin** and  
 glutathione for improvement of the red color of fish  
 meat and culturing fish having red meat with the  
**feeds**  
 INVENTOR(S): Kasagi, Hiroko; Shinro, Osamu; Nishijima, Kunihide;  
 Hamazawa, Kazuhiro; Aoyanagi, Yoshinori; Kobayashi,  
 Ushio  
 PATENT ASSIGNEE(S): Kojin Kk, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 07231755	A	19950905	JP 1994-49921	19940224 <--
PRIORITY APPLN. INFO.:			JP 1994-49921	19940224 <--

AB Fish, having red meat, is cultured with **feeds** containing 10-100 ppm  
**astaxanthin** (I) and 50-5000 ppm glutathione (II). Rainbow trout cultured with  
 a **feed** containing 30 ppm I and 800 ppm II for 78 days accumulated 11.71 ppm I  
 per fish, vs. 6.34 ppm/fish for the control cultured with a **feed** without II.

IC ICM A23K001-18  
 ICS A23K001-16  
 CC 17-12 (Food and Feed Chemistry)  
 Section cross-reference(s): 18  
 ST red fish **feed astaxanthin** glutathione  
 IT **Feed**  
**Feeding** experiment

Fish

Oncorhynchus mykiss

(**feeds** containing **astaxanthin** and glutathione for fish  
for improvement of red color of meat)

IT 472-61-7, **Astaxanthin**

RL: BPR (Biological process); BSU (Biological study, unclassified); FFD  
(Food or feed use); BIOL (Biological study); **PROC (Process)**;  
USES (Uses)

(**feeds** containing **astaxanthin** and glutathione for fish  
for improvement of red color of meat)

IT 70-18-8, Glutathione, biological studies

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(**feeds** containing **astaxanthin** and glutathione for fish  
for improvement of red color of meat)

L87 ANSWER 23 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1994:578275 HCAPLUS Full-text

DOCUMENT NUMBER: 121:178275

TITLE: the effect of various **processing** methods on  
the physical and biochemical properties of shrimp head  
meals and their utilization by juvenile *Penaeus*  
*monodon* Fab.

AUTHOR(S): Fox, C.J.; Blow, P.; Brown, J.H.; Watson, I.

CORPORATE SOURCE: Inst. Aquacult., Univ. Stirling, Stirling, FK9 4LA, UK

SOURCE: Aquaculture (1994), 122(2-3), 209-26

CODEN: AQCLAL; ISSN: 0044-8486

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Three meals were **prepared** from *Penaeus monodon* head waste by drying the raw material in a solar simulator, drying in an oven or blanching the raw material followed by partial de-watering under pressure and air drying. Another 3 meals were **prepared** by passing batches of raw or blanched shrimp head waste through a com. meat/bone separator. The meat fraction was subsequently dried (MBDD) or ensiled. Separated meals contained around 6% less ash, 5% less chitin, and 7.5% more protein than unsepd. meals but the **procedure** failed to remove all the exoskeletal material. Separated meals also contained higher levels of **astaxanthin** and canthaxanthin than solar or oven-dried meals. The highest levels of n-3 polyunsatd. fatty acids (PUFAs) were found in separated meals. However, blanching the raw material prior to **processing** decreased the PUFA content, increased the free fatty acid levels, and significantly elevated peroxide values. All the meals were found to be deficient in arginine and methionine plus cystine but separated meals contained greater quantities of the remaining essential amino acids and had essential amino acid indexes greater than 0.70. Exptl. rations were **prepared** incorporating either 54% fish meal or 31% of the solar-dried, oven-dried or MBDD shrimp head meals plus sufficient fish meal to generate isoproteinaceous diets. Each diet was fed to triplicate groups of 40 juvenile *Penaeus monodon* in a 50-day growth trial. Diets containing shrimp head meal performed significantly better in terms of final individual weight, **feed** conversion ratio, and production compared with the 54% fish meal-based diet. The diet containing separated shrimp head meal produced the best response, followed by the diets containing oven-dried and solar-dried meal, but the differences were not statistically significant. Similar trends were noted for specific growth rate and survival. Tests on the exptl. diets indicated that the incorporation of shrimp head meals reduced water stability but increased diet palatability when compared to the fish meal-based diet.

CC 17-12 (Food and Feed Chemistry)

Section cross-reference(s): 18

ST shrimp head **feed processing** compn quality; *Penaeus*  
**feeding** expt shrimp head meal

- IT *Penaeus monodon*  
(**feeding** experiment on juvenile, with shrimp head meal,  
**processing** method effect on)
- IT **Feed**  
(from shrimp heads, for *Penaeus monodon* juveniles, **processing**  
method effect on composition and quality of)
- IT Amino acids, biological studies  
Fatty acids, biological studies  
Lipids, biological studies  
Mineral elements  
Proteins, biological studies  
RL: BIOL (Biological study)  
(of shrimp head meal, **processing** effect on)
- IT Drying  
(of shrimp heads, for manufacture of **feed** for *Penaeus monodon*  
juveniles, composition and quality in relation to methods of)
- IT Blanching  
(of shrimp heads, for manufacture of **feed** for *Penaeus monodon*  
juveniles, **processing** method effect on composition and quality of)
- IT Waste solids  
(shrimp head meal, **processing** method effect on composition and  
quality of)
- IT **Feeding** experiment  
(with shrimp head meal, on *Penaeus monodon*, **feed**  
**processing** method effect on)
- IT Amino acids, biological studies  
RL: BIOL (Biological study)  
(essential, of shrimp head meal, **processing** effect on)
- IT Shrimp  
(meal, head, composition and nutritional value for *Penaeus monodon*,  
**feed processing** method effect on)
- IT Fatty acids, biological studies  
RL: BIOL (Biological study)  
(polyunsatd., n-3, of shrimp head meal, **processing** effect on)
- IT 56-89-3, Cystine, biological studies 63-68-3, Methionine, biological  
studies 74-79-3, Arginine, biological studies **472-61-7**,  
**Astaxanthin** 514-78-3, Canthaxanthin 1398-61-4, Chitin  
RL: BIOL (Biological study)  
(of shrimp head meal, **processing** effect on)

L87 ANSWER 24 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1994:162246 HCAPLUS Full-text

DOCUMENT NUMBER: 120:162246

TITLE: Starfish carotenoids for use in **feeds** for  
improvement of color of animal, especially fish

INVENTOR(S): Miura, Hiroshi

PATENT ASSIGNEE(S): Daicel Chem, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05328909	A	19931214	JP 1992-137386	19920529 <--
PRIORITY APPLN. INFO.:			JP 1992-137386	19920529 <--

AB The carotenoids, especially **astaxanthin**, are extracted from starfish for use  
in **preparation** of **feeds** to improve the color of animal and animal meat.

Isolation of carotenoids from starfish by extraction with acetone and the use of the carotenoids in **feeding** experiment using red sea bream and Donaldson's trout were shown.

IC ICM A23K001-16  
ICS A23K001-18  
CC 17-12 (Food and Feed Chemistry)  
ST starfish carotenoid fish **feed**; color improvement starfish carotenoid **feed**  
IT Fish  
(carotenoids of starfish for **feeds** for improvement of color of)  
IT **Feed**  
(carotenoids of starfish for, for improvement of color of fish)  
IT Asteroidea  
(carotenoids of, for **feeds** for improvement of color of fish)  
IT Carotenes and Carotenoids, biological studies  
RL: BIOL (Biological study)  
(of starfish, for **feeds** for improvement of color of fish and fish meat)  
IT 472-61-7, **Astaxanthin**  
RL: BIOL (Biological study)  
(in carotenoids of starfish for **feeds** for improvement of color of fish and fish meat)

L87 ANSWER 25 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN.

ACCESSION NUMBER: 1991:557605 HCAPLUS Full-text

DOCUMENT NUMBER: 115:157605

TITLE: Dry solid compositions containing lipid for fat-soluble **feed** supplements

INVENTOR(S): Freeman, Christopher P.; Jarvis, Robert M.; Wilding, Peter

PATENT ASSIGNEE(S): Unilever PLC, UK

SOURCE: Can. Pat. Appl., 14 pp.

CODEN: CPXXEB

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
CA 2002061	A1	19910502	CA 1989-2002061	19891102 <--
PRIORITY APPLN. INFO.:			CA 1989-2002061	19891102 <--

AB A dry powder containing 70-95% lipid (glycerides and fatty acids) is **prepared** by drying an emulsion containing .apprx.40% free fatty acids, 5-30% caseinates, and the balance glycerides. The powder is for use in **feed**, especially for fish, and is suitable as a carrier for fat-soluble dietary supplements. Sodium caseinate 2.4 kg in water 13.6L was homogenized with fish oil fatty acid distillate 3.6 kg, neutralized fish oil 5.4 kg, and an antioxidant followed by drying in a fluid bed drier to give a free-flowing powder that could be handled without leaving an oil residue. After storage in paper sacks or heat-sealed plastic bags for up to 20 mo there was no significant loss of polyunsatd. fatty acids (C22:6 and C20:5) from the **preparation**

IC ICM A23J001-20  
ICS A23K001-08  
CC 17-12 (Food and Feed Chemistry)  
ST fat dry powder fish **feed** supplement; caseinate glyceride fatty acid dry powder  
IT Fats, properties



- RL: **PREP (Preparation)**  
(dry powders high in, **preparation** of, caseinates and fatty acids in, for **feed**)
- IT Fatty acids, biological studies  
RL: BIOL (Biological study)  
(fat-rich dry powders containing caseinates and glycerides and, for **feed**)
- IT Carotenes and Carotenoids, uses and miscellaneous  
Vitamins  
RL: BIOL (Biological study)  
(fat-rich dry powders containing, as **feed** supplement)
- IT Fish  
(**feed** for, fat-rich dry powder as supplement for)
- IT **Feed**  
(for fish, fat-rich dry powder as supplement for)
- IT Salmon  
Salmonidae  
Trout  
(rearing of, **feed** in, fat-rich dry powder as supplement for)
- IT Oils, glyceridic  
RL: **PREP (Preparation)**  
(fish, dry powders high in, **preparation** of, caseinates and fatty acids in, for **feed**)
- IT Caseins, compounds  
RL: BIOL (Biological study)  
(metal complexes, fat-rich dry powders containing fatty acids and glycerides and, for **feed**)
- IT Caseins, compounds  
RL: BIOL (Biological study)  
(sodium complexes, fat-rich dry powders containing fatty acids and glycerides and, for **feed**)
- IT **472-61-7, Astaxanthin**  
RL: BIOL (Biological study)  
(fat-rich dry powders containing, as **feed** supplement)

L87 ANSWER 26 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1992:5529 HCAPLUS Full-text

DOCUMENT NUMBER: 116:5529

TITLE: Carotenoproteins from lobster waste as a potential **feed** supplement for cultured salmonids

AUTHOR(S): Ya, Tu; Simpson, B. K.; Ramaswamy, H.; Yaylayan, V.; Smith, J. P.; Hudon, C.

CORPORATE SOURCE: Macdonald Coll., McGill univ., Ste. Anne de Bellevue, QC, H9X 1C0, Can.

SOURCE: Food Biotechnology (New York, NY, United States) ( **1991**), 5(2), 87-93

CODEN: FBIOEE; ISSN: 0890-5436

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Lobster waste (including the head and hard carapace, viscera, mandibles and gills) contains .apprx.54 µg/g total **astaxanthin**, 29% protein, 23% chitin, 34% ash and 2.2% crude fat on a dry weight basis. Trypsin from bovine pancreas was applied to facilitate the recovery of carotenoid pigments and protein as carotenoprotein complex, which was subsequently air-dried to a stable powder form at 45° and 15% relative humidity. The product contained 60% protein, 15% crude fat, 6% ash, 8% chitin and 295 µg/g total **astaxanthin**. Thus, the **process** achieved a substantial reduction in the levels of antinutrients associated with lobster waste (i.e., ash and chitin) while elevating the levels of carotenoid pigments and essential nutrients such as protein and fat in the recovered product. These characteristics of the final product suggest

that it could be used as an inexpensive source of pigment and protein in diets of cultured salmonid species.

CC 17-12 (Food and Feed Chemistry)  
 ST lobster waste carotenoprotein **feed** salmonid  
 IT Waste solids  
     (carotenoproteins from lobster, for salmonid **feed**)  
 IT Lobster  
     (carotenoproteins from wastes of, for salmonid **feed**)  
 IT Salmonidae  
     (**feed** for, carotenoproteins of lobster waste for)  
 IT **Feed**  
     (for salmonids, carotenoproteins from lobster waste for)  
 IT Carotenoproteins  
 RL: BIOL (Biological study)  
     (of lobster waste, for salmonid **feed**)

L87 ANSWER 27 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1990:117642 HCAPLUS Full-text  
 DOCUMENT NUMBER: 112:117642  
 TITLE: Manufacture of **astaxanthin** powder for  
             **feed**  
 INVENTOR(S): Watanabe, Kaiji  
 PATENT ASSIGNEE(S): Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.  
           CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01186860	A	19890726	JP 1988-6346	19880114 <--
PRIORITY APPLN. INFO.:			JP 1988-6346	19880114 <--

AB **Astaxanthin** powder is **prepared** by drying and pulverizing shellfish and/or shells at 0-35°. The powder is added to fish- **feed** which may be used to produce a reddish color in gold fish and carp. Thus, a **procedure** was described for the drying and pulverization of krills and extraction of **astaxanthin**.

IC ICM C07C175-00  
 ICS A23K001-16

CC 17-12 (Food and Feed Chemistry)  
 ST **astaxanthin** shellfish **feed**  
 IT **Feed**  
     (**astaxanthin** powder manufacture for, from shells)  
 IT Shell  
     Shellfish  
     (**astaxanthin** powder manufacture from, for **feed**)  
 IT 472-61-7P, **Astaxanthin**  
 RL: **PREP (Preparation)**  
     (powder, manufacture of, for **feed**)

L87 ANSWER 28 OF 71 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1985:111840 HCAPLUS Full-text  
 DOCUMENT NUMBER: 102:111840  
 TITLE: Carotenoid pigment and fatty acid analyses of crawfish oil extracts  
 AUTHOR(S): Omara-Alwala, Thomas R.; Chen, Huei Mei; Ito, Yoshihito; Simpson, Kenneth L.; Meyers, Samuel P.  
 CORPORATE SOURCE: Dep. Food Sci. Technol., Univ. Rhode Island, Kingston,

RI, 02881, USA  
 SOURCE: Journal of Agricultural and Food Chemistry ( **1985**), 33(2), 260-3  
 CODEN: JAFCAU; ISSN: 0021-8561

DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB Mono- and diester **astaxanthins** were demonstrated to be the primary (87%) carotenoids in pigmented oil from heat-**processed** crawfish waste by using com. soy, menhaden, and herring-like oils as extractants. Acid ensilage treatment of the crawfish material did not qual. or adversely affect **astaxanthin** and fatty acid profiles in the pigment-enriched oil. The fatty acid composition of the oil extractant was modified slightly by the pigment extraction **process**. Concentration of crawfish pigments in soy oil resulted in a 2% decrease in the total saturated fatty acids, a 6% increase in the total monoenes, and a 4% decrease in the total polyunsatd. fatty acids (PUFA). Analyses of the crawfish fatty acids showed a comparatively high proportion of linolenic acid (18:3 $\omega$ 3) (8%) and other long-chain PUFA, i.e., 20:5 $\omega$ 3 and 22:6 $\omega$ 3. The sterol contents of crawfish meal (2  $\mu$ g/mg) and its pigmented oil exts. (6  $\mu$ g/mg) are discussed in terms of dietary formulations for aquatic species.

CC **17-12** (Food and Feed Chemistry)  
 Section cross-reference(s): 12

ST crawfish carotenoid fatty acid **feed**; oil crawfish carotenoid fatty acid

IT Soybean oil  
 RL: BIOL (Biological study)  
 (crawfish **astaxanthin** extraction by, for fish **feed** manufacture)

IT Oils  
 RL: BIOL (Biological study)  
 (fish, crawfish **astaxanthin** extraction by, in fish **feed** manufacture)

IT **Feed**  
 (for fish, from crawfish waste oil extract)

IT Carotenes and Carotenoids, biological studies  
 RL: BIOL (Biological study)  
 (of crawfish waste, for fish **feed** manufacture)

IT Waste solids  
 (of crawfish, **astaxanthin** and fatty acids of oil extract of, for fish **feed** manufacture)

IT **Procambarus clarki**  
 (waste, **astaxanthin** and fatty acids of oil extract of, for fish **feed** manufacture)

IT Steroids, biological studies  
 RL: BIOL (Biological study)  
 (hydroxy, of crawfish waste oil extract, fish **feed** manufacture in relation to)

IT Fish  
 (meal, crawfish, **astaxanthin** and fatty acids of)

IT Fatty acids, biological studies  
 RL: BIOL (Biological study)  
 (polyunsatd., of crawfish waste, for fish **feed** manufacture)

IT 79-09-4, biological studies  
 RL: BIOL (Biological study)  
 (crawfish waste ensilage with, **astaxanthin** content response to)

IT 514-76-1  
 RL: BIOL (Biological study)  
 (of crawfish waste oil extract, fish **feed** manufacture in relation to)

IT **472-61-7 472-61-7D**, esters  
 RL: BIOL (Biological study)

(of crawfish waste, oil extraction of)

L87 ANSWER 29 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2004-480351 [45] WPIX  
 DOC. NO. CPI: C2004-178637 [45]  
 TITLE: Isolation of red-pigmented compounds, e.g. carotenoids and flavonoids, from marine bacteria, by producing quantities of red-pigmented compound(s) from cultured bacterium, purifying pigmented compound(s), and isolating pigmented compound(s)  
 DERWENT CLASS: B04; D16; E23  
 INVENTOR: SPRAGG A M  
 PATENT ASSIGNEE: (AQUA-N) AQUAPHARM BIO-DISCOVERY LTD  
 COUNTRY COUNT: 104

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2004048589	A1	20040610	(200445)*	EN	14[8]	
AU 2003285530	A1	20040618	(200471)	EN		

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2004048589	A1	WO 2003-GB5154	20031126
AU 2003285530	A1	AU 2003-285530	20031126

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2003285530	A1	WO 2004048589
	Based on	A

PRIORITY APPLN. INFO: **GB 2002-27730 20021128**

AN 2004-480351 [45] WPIX  
 AB WO 2004048589 A1 UPAB: 20050530

NOVELTY - A red-pigmented compound, e.g. a carotenoid and/or a flavonoid, is isolated from a marine bacterium belonging to the genus *Pseudoalteromonas* sp. by:

(a) culturing the bacterium in a culture medium under conditions and for a time to produce quantities of the red-pigmented compound(s);

(b) subjecting the bacterium to purification **procedures** to purify the red-pigmented compound(s); and

(c) isolating the red-pigmented compound(s).

USE - The method is for isolating a red-pigmented compound, e.g. carotenoid (e.g. **astaxanthin**) and/or flavonoid (e.g. anthocyanin), from a marine bacterium belonging to the genus *Pseudoalteromonas* sp.. The **astaxanthin** is used:

(a) in the **preparation** of fish **feed** pellets, or **animal feed**;

(b) in paints and coatings, plastics, spin dried fibers, construction materials, paper, ceramics, opto-electronic devices, elastomers, inks, textiles, glass, food and pharmaceuticals (e.g. an additive coloring agent), and cosmetics; and

(c) as an anti-oxidant for use in the treatment and/or prevention of disease or undesirable environmental effects.

The anthocyanin is used:

- (a) in the **preparation** of an antibiotic and/or anti-microbial agent;
- (b) in contact ink for use in the food packaging industry; and
- (c) as an anti-oxidant for use in the treatment and/or prevention of disease or undesirable environmental effects (claimed).

ADVANTAGE - The method is capable of producing the red-pigmented compounds that displays anti-bacterial/anti-microbial activity.

L87 ANSWER 30 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2004-295425 [27] WPIX  
 DOC. NO. CPI: C2004-113080 [27]  
 TITLE: Targeted expression of transgenes in non-reproductive flower tissue, useful e.g. for producing pharmaceuticals and fine chemicals, uses specific tissue-selective promoters  
 DERWENT CLASS: B04; C06; D13; D16; P13  
 INVENTOR: FLACHMANN R; HERBERS K; HILLEBRAND H; KEETMAN U; KLEBSATTEL M; SAUER M  
 PATENT ASSIGNEE: (SUNG-N) SUNGENE GMBH & CO KGAA; (FLAC-I) FLACHMANN R; (HERB-I) HERBERS K; (HILL-I) HILLEBRAND H; (KEET-I) KEETMAN U; (KLEB-I) KLEBSATTEL M; (SAUE-I) SAUER M  
 COUNTRY COUNT: 104

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2004027070	A2	20040401	(200427)*	DE	91[14]	
AU 2003255497	A1	20040408	(200462)	EN		
EP 1537218	A2	20050608	(200537)	DE		
US 20060168695	A1	20060727	(200650)	EN		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2004027070	A2	WO 2003-EP9594	20030829
AU 2003255497	A1	AU 2003-255497	20030829
EP 1537218	A2	EP 2003-797257	20030829
EP 1537218	A2	WO 2003-EP9594	20030829
US 20060168695	A1	WO 2003-EP9594	20030829
US 20060168695	A1	US 2005-526411	20050302

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2003255497	A1	WO 2004027070 A
EP 1537218	A2	WO 2004027070 A

PRIORITY APPLN. INFO: **DE 2002-10241124 20020903**

AN 2004-295425 [27] WPIX  
 AB WO 2004027070 A2 UPAB: 20060121

NOVELTY - Method for targeted transgenic expression of nucleic acid (I) in non-reproductive flower tissue (A).

DETAILED DESCRIPTION - Method for targeted transgenic expression of nucleic acid (I) in non-reproductive flower tissue (A) comprises introducing a transgenic expression cassette (EC) into plant cells; selecting cells that have stably integrated EC into the genome, and regenerating selected cells to

complete plants. EC contains at least one promoter (P); at least one additional (I), at least one of which is expressed in essentially all (A) but not in pollen or ovaries, and optionally additional control elements, with at least one (P) and one (I) functionally linked, and where (I) is heterologous with respect to (P). (P) is either of sequences (1; 2039 bp) or (2; 2180 bp) or functionally equivalent sequences, or fragments of them with practically the same promoter activity.

INDEPENDENT CLAIMS are also included for the following:

- (1) method for identification and/or isolation of promoters specific for (A);
- (2) method for **preparing** transgenic EC specific for (A);
- (3) polypeptides (II) of 130, 142, 139 or 139 amino acids (sequences reproduced);
- (4) nucleic acid (III) that encodes (II);
- (5) use of nucleic acid (IIIa) encoding any of 10 sequences (reproduced), or their variants, for identifying or isolating (P);
- (6) EC;
- (7) transgenic expression vector that contains EC;
- (8) transgenic organism that includes EC or the vector of (7); and
- (9) method for **preparing** pharmaceuticals or fine chemicals using the organisms of (8) or derived materials.

USE - The method is used to **prepare** transgenic organisms, especially plants, useful (claimed) for production of foods, **animal feeds**, seeds, pharmaceuticals (e.g. antibodies and vaccines) and fine chemicals (particularly vitamins, amino or fatty acids, flavors, perfumes and colorants, especially tocopherols, tocotrienols and carotenoids such as **astaxanthin**). It can also be used to protect buds and flowers against biotic or abiotic stress (frost, pathogens etc.); to improve nutrient content and yield; to promote prolonged or earlier flowering and to alter color or scent of flowers.

ADVANTAGE - The method provides selective expression in non-reproductive flower tissue, so transgenic expression does not affect reproduction and the risk of releasing transgenes in pollen or seeds is reduced. Expression is practically constant during the entire development period of bud and flower.

L87 ANSWER 31 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2004-554601 [54] WPIX  
 CROSS REFERENCE: 2004-215840; 2004-215841; 2004-215842; 2004-295424;  
 2004-489014; 2005-202657; 2005-202658; 2005-202663  
 DOC. NO. CPI: C2004-203123 [54]  
 DOC. NO. NON-CPI: N2004-438686 [54]  
 TITLE: Use of **astaxanthin**-containing plant material,  
 or extracts, from **Tagetes** for oral  
 administration to animals, particularly for pigmentation  
 of fish, crustacea, birds and their products  
 DERWENT CLASS: B05; C06; D13; D16; E15; E24; P13; P14  
 INVENTOR: FLACHMANN R; HERBERS K; KLEBSATTEL M; KUNZE I; LUCK T;  
 PFEIFFER A; SAUER M; SCHOPFER C; SCHOPFER C R; VOESTE D  
 PATENT ASSIGNEE: (BADI-C) BASF AG; (BADI-C) BASF PLANT SCI GMBH; (SUNG-N)  
 SUNGENE GMBH & CO KGAA  
 COUNTRY COUNT: 36

PATENT INFO ABBR.:

PATENT NO	KIND DATE	WEEK	LA	PG	MAIN IPC
DE 10258971	A1 20040701	(200454)*	DE	145[15]	
AU 2003264062	A1 20040311	(200457)	EN		
AU 2003287944	A1 20040329	(200459)	EN		

NO 2005000598	A	20050407	(200534)	NO
EP 1532256	A1	20050525	(200535)	DE
EP 1531683	A2	20050525	(200535)	DE
NO 2005000600	A	20050418	(200535)	NO
EP 1542945	A2	20050622	(200541)	DE
US 20050255541	A1	20051117	(200576)	EN
US 20050281909	A1	20051222	(200603)	EN
CN 1675367	A	20050928	(200610)	ZH
US 20060031963	A1	20060209	(200612)	EN
MX 2005001899	A1	20050901	(200617)	ES
MX 2005001948	A1	20050901	(200617)	ES
CN 1688206	A	20051026	(200618)	ZH
CN 1688711	A	20051026	(200618)	ZH
CN 1688712	A	20051026	(200618)	ZH
CN 1688713	A	20051026	(200618)	ZH
MX 2005001811	A1	20051101	(200625)	ES
MX 2005001944	A1	20050701	(200628)	ES
US 20060112451	A1	20060525	(200635)	EN
EP 1532263	B1	20061011	(200668)	DE
US 20060253927	A1	20061109	(200674)	EN
DE 50305376	G	20061123	(200680)	DE

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 10258971	A1	<b>DE 2002-10258971</b>	<b>20021216</b>
AU 2003264062	A1	AU 2003-264062	20030818
CN 1675367	A	CN 2003-819751	20030818
CN 1688206	A	CN 2003-824205	20030818
CN 1688711	A	CN 2003-824224	20030818
CN 1688712	A	CN 2003-824331	20030818
CN 1688713	A	CN 2003-824350	20030818
EP 1532256	A1	EP 2003-792344	20030818
EP 1542945	A2	EP 2003-792347	20030818
EP 1531683	A2	EP 2003-792350	20030818
NO 2005000598	A	WO 2003-EP9105	20030818
EP 1532256	A1	WO 2003-EP9101	20030818
EP 1531683	A2	WO 2003-EP9109	20030818
NO 2005000600	A	WO 2003-EP9101	20030818
EP 1542945	A2	WO 2003-EP9105	20030818
US 20050281909	A1	WO 2003-EP9109	20030818
US 20060031963	A1	WO 2003-EP9102	20030818
MX 2005001899	A1	WO 2003-EP9106	20030818
MX 2005001948	A1	WO 2003-EP9109	20030818
MX 2005001811	A1	WO 2003-EP9102	20030818
MX 2005001944	A1	WO 2003-EP9107	20030818
US 20060112451	A1	WO 2003-EP9106	20030818
US 20060253927	A1	WO 2003-EP9105	20030818
AU 2003287944	A1	AU 2003-287944	20030820
EP 1532263	B1	EP 2003-779784	20030820
US 20050255541	A1	WO 2003-EP9218	20030820
EP 1532263	B1	WO 2003-EP9218	20030820
NO 2005000598	A	NO 2005-598	20050203
NO 2005000600	A	NO 2005-600	20050203
MX 2005001811	A1	MX 2005-1811	20050215
MX 2005001899	A1	MX 2005-1899	20050217
US 20050281909	A1	US 2005-524647	20050217
MX 2005001944	A1	MX 2005-1944	20050218
MX 2005001948	A1	MX 2005-1948	20050218

US 20060112451 A1  
 US 20060031963 A1  
 US 20060253927 A1  
 US 20050255541 A1  
 DE 50305376 G  
 DE 50305376 G  
 DE 50305376 G

US 2005-524827 20050218  
 US 2005-524972 20050218  
 US 2005-524652 20050328  
 US 2005-524990 20050625  
 DE 2003-505376 20030820  
 EP 2003-779784 20030820  
 WO 2003-EP9218 20030820

## FILING DETAILS:

PATENT NO	KIND		PATENT NO	
AU 2003264062	A1	Based on	WO 2004017749	A
EP 1531683	A2	Based on	WO 2004017749	A
MX 2005001948	A1	Based on	WO 2004017749	A
EP 1542945	A2	Based on	WO 2004018385	A
EP 1532256	A1	Based on	WO 2004018688	A
MX 2005001811	A1	Based on	WO 2004018693	A
MX 2005001899	A1	Based on	WO 2004018694	A
MX 2005001944	A1	Based on	WO 2004018695	A
AU 2003287944	A1	Based on	WO 2004022765	A
EP 1532263	B1	Based on	WO 2004022765	A
DE 50305376	G	Based on	EP 1532263	A
DE 50305376	G	Based on	WO 2004022765	A

PRIORITY APPLN. INFO: **DE 2002-10258971 20021216**  
**DE 2002-10238978 20020820**  
**DE 2002-10238979 20020820**  
**DE 2002-10238980 20020820**  
**DE 2002-10253112 20021113**

AN 2004-554601 [54] WPIX

CR 2004-215840; 2004-215841; 2004-215842; 2004-295424; 2004-489014;  
 2005-202657; 2005-202658; 2005-202663

AB DE 10258971 A1 UPAB: 20060203

NOVELTY - Use of **astaxanthin** (I)-containing plants of the genus **Tagetes** or their parts, or (I)-containing extracts of them, for oral administration to animals.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following: (1) **preparation** of an **animal feed** composition by mixing standard fodder ingredients with (I)-containing plants of the genus **Tagetes** or their parts, or (I)-containing extracts of them; (2) method for pigmentation of animals, or their products, by oral administration of (I)-containing plants of the genus **Tagetes** or their parts, or (I)-containing extracts of them; and (3) **animal feed** composition or pigmentation agent that contains (I)-containing plants of the genus **Tagetes** or their parts, or (I)-containing extracts of them.

USE - (I)-containing compositions are used particularly for pigmentation of animals, preferably fish, crustacea and birds, or their products (meat, skin, feathers and eggs), most particularly trout, salmon and shrimp.

ADVANTAGE - Genetically modified **Tagetes** produce larger amounts of (I) than the current source, *Adonis aestivalis*, and more cheaply.

L87 ANSWER 32 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2004-489014 [47] WPIX  
 CROSS REFERENCE: 2004-215840; 2004-215841; 2004-215842; 2004-295424;  
 2004-554601; 2005-202657; 2005-202658; 2005-202663  
 DOC. NO. CPI: C2004-182265 [47]  
 DOC. NO. NON-CPI: N2004-385612 [47]



TITLE: Production of ketocarotenoids with low hydroxylated by-product content, for use e.g. in pigmenting **feedstuffs**, by culturing genetically modified organisms having modified ketolase activity

DERWENT CLASS: B05; D13; D16; E15; P13

INVENTOR: FLACHMANN R; KLEBSATTEL M; SAUER M; SCHOPFER C R

PATENT ASSIGNEE: (SUNG-N) SUNGENE GMBH & CO KGAA

COUNTRY COUNT: 1

## PATENT INFO ABBR.:

PATENT NO	KIND DATE	WEEK	LA PG.	MAIN IPC
DE 10253112	A1 20040603	(200447)*	DE 101[6]	

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 10253112	A1	<b>DE 2002-10253112</b>	<b>20021113</b>

PRIORITY APPLN. INFO: **DE 2002-10253112 20021113**

AN 2004-489014 [47] WPIX

CR 2004-215840; 2004-215841; 2004-215842; 2004-295424; 2004-554601; 2005-202657; 2005-202658; 2005-202663

AB DE 10253112 A1 UPAB: 20060121

NOVELTY - Production of ketocarotenoids (I) involves culturing genetically modified organisms having modified ketolase (KLA) activity (compared with wild strains) due to a ketolase (II) containing a specific sequence (A) of 258 aminoacids (given in the specification as SEQ. ID. NO. 2) or a mutant sequence of (A), provided that (A') has at least 42% homology with (A).

DETAILED DESCRIPTION - Production of ketocarotenoids (I) involves culturing genetically modified organisms having modified ketolase (KLA) activity (compared with wild strains) due to a ketolase (II) containing a specific sequence (A) of 258 aminoacids (given in the specification as SEQ. ID. NO. 2) or a sequence (A) derived from (A) by substitution, insertion or deletion of amino acids, provided that (A') has at least 42% homology with (A).

## INDEPENDENT CLAIMS are included for:

- (1) genetically modified organisms which:
  - (a) show increased KLA activity compared with wild strains (or into which KLA activity is introduced if the wild strain has no KLA activity), having KLA activity due to (II); and/or
  - (b) contain at least one transgenic nucleic acid encoding (A) or (A') or at least two endogenous nucleic acid sequences encoding (II);
- (2) new ketolases (II'), which contain:
  - (a) a specific sequence (Ai) of 262 aminoacids (SEQ. ID. NO. 8) or a sequence (Ai') derived from (Ai) by substitution, insertion or deletion, provided that (Ai') has at least 70% homology with (Ai) and that a specific sequence of 262 aminoacids (SEQ. ID. NO. 4) is excluded;
  - (b) a specific sequence (Aii) of 253 aminoacids (SEQ. ID. NO. 6) or a sequence (Aii') derived from (Aii) by substitution, insertion or deletion, provided that (Aii') has at least 70% homology with (Aii);
  - (c) a specific sequence (Aiii) of 253 aminoacids (SEQ. ID. NO. 12) or a sequence (Aiii') derived from (Aiii) by substitution, insertion or deletion, provided that (Aiii') has at least 70% homology with (Aiii) and that SEQ. ID. NO. 4 is excluded; or
  - (d) a specific sequence (Aiv) of 267 aminoacids (SEQ. ID. NO. 49) or a sequence (Aiv') derived from (Aiv) by substitution, insertion or deletion, provided that (Aiv') has at least 50% homology with (Aiv) and that a specific

sequence of 267 aminoacids (SEQ. ID. NO. 47) is excluded, where all the sequences are defined in the specification;

(3) nucleic acids encoding (II'), provided that a specific sequence of 762 bases (SEQ. ID. NO. 5; sequence defined in the specification) is excluded; and

(4) the use as ketolase of proteins which contain SEQ. ID. NO. 4 (or a derived sequence having at least 70% homology with SEQ. ID. Number 4), SEQ. ID. NO. 6 (or a derived sequence having at least 65% homology with SEQ. ID. Number 6) or SEQ. ID. NO. 47 (or a derived sequence having at least 50% homology with SEQ. ID. Number 47) and show KLA activity, where all the sequences are defined in the specification.

USE - (I) are natural antioxidants and pigments, especially useful (particularly in the case of (Ia)) as pigmenting additives in **animal feed**, specifically **feed** for trout, salmon or shrimps. The use of the (I)-producing genetically modified organisms (specifically microorganisms or plants) is claimed as **feedstuffs** or foodstuffs, in the production of (I)-containing extracts or for producing **feed** or food supplements.

ADVANTAGE - The **process** provides large amounts of (I) having a low content of hydroxylated by-products, especially in the case of (Ia).

L87 ANSWER 33 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2004-215842 [21] WPIX  
 CROSS REFERENCE: 2004-215840; 2004-215841; 2004-295424; 2004-489014;  
 2004-554601; 2005-202657; 2005-202658; 2005-202663  
 DOC. NO. CPI: C2004-085425 [21]  
 DOC. NO. NON-CPI: N2004-171009 [21]  
 TITLE: Method for **preparing** ketocarotenoids, useful  
 e.g. as food or **feed** supplements, by  
 increasing, or introducing, ketolase activity in the  
 petals of transgenic plants, also new nucleic acid  
 constructs  
 DERWENT CLASS: B05; C06; D13; D16; E15; E24; P13  
 INVENTOR: FLACHMANN R; HERBERS K; KLEBSATTEL M; KUNZE I; LUCK T;  
 PFEIFFER A; SAUER M; SCHOPFER C; SCHOPFER C R; VOESTE D  
 PATENT ASSIGNEE: (BADI-C) BASF AG; (BADI-C) BASF PLANT SCI GMBH; (SUNG-N)  
 SUNGENE GMBH & CO KGAA  
 COUNTRY COUNT: 104  
 PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
DE 10238980	A1	20040304	(200421)*	DE	140[21]	
WO 2004018688	A1	20040304	(200421)	DE		
WO 2004017749	A2	20040304	(200421)	DE		
WO 2004018385	A2	20040304	(200421)	DE		
WO 2004018693	A2	20040304	(200421)	DE		
WO 2004018694	A2	20040304	(200421)	DE		
WO 2004018695	A2	20040304	(200421)	DE		
WO 2004022765	A2	20040318	(200421)	DE		
AU 2003253416	A1	20040311	(200457)	EN		
AU 2003258622	A1	20040311	(200457)	EN		
AU 2003258623	A1	20040311	(200457)	EN		
AU 2003260423	A1	20040311	(200457)	EN		
AU 2003260424	A1	20040311	(200457)	EN		
EP 1532263	A2	20050525	(200535)	DE		
EP 1532264	A2	20050525	(200535)	DE		
EP 1532265	A2	20050525	(200535)	DE		
EP 1532266	A2	20050525	(200535)	DE		

10524647

NO 2005000703	A	20050509 (200540)	NO
NO 2005000704	A	20050513 (200540)	NO
NO 2005000705	A	20050518 (200540)	NO
NO 2005000755	A	20050519 (200540)	NO
US 20060059584	A1	20060316 (200620)	EN
AU 2003287944	A8	20051103 (200629)	EN

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 10238980	A1	<b>DE 2002-10238980</b>	<b>20020820</b>
AU 2003253416	A1	AU 2003-253416	20030818
AU 2003258622	A1	AU 2003-258622	20030818
AU 2003258623	A1	AU 2003-258623	20030818
AU 2003260423	A1	AU 2003-260423	20030818
AU 2003260424	A1	AU 2003-260424	20030818
EP 1532264	A2	EP 2003-792345	20030818
EP 1532265	A2	EP 2003-792348	20030818
EP 1532266	A2	EP 2003-792349	20030818
WO 2004018688	A1	WO 2003-EP9101	20030818
WO 2004017749	A2	WO 2003-EP9109	20030818
WO 2004018385	A2	WO 2003-EP9105	20030818
WO 2004018693	A2	WO 2003-EP9102	20030818
WO 2004018694	A2	WO 2003-EP9106	20030818
WO 2004018695	A2	WO 2003-EP9107	20030818
EP 1532264	A2	WO 2003-EP9102	20030818
EP 1532265	A2	WO 2003-EP9106	20030818
EP 1532266	A2	WO 2003-EP9107	20030818
NO 2005000703	A	WO 2003-EP9106	20030818
NO 2005000704	A	WO 2003-EP9109	20030818
NO 2005000705	A	WO 2003-EP9102	20030818
NO 2005000755	A	WO 2003-EP9107	20030818
US 20060059584	A1	WO 2003-EP9101	20030818
EP 1532263	A2	EP 2003-779784	20030820
WO 2004022765	A2	WO 2003-EP9218	20030820
EP 1532263	A2	WO 2003-EP9218	20030820
NO 2005000703	A	NO 2005-703	20050209
NO 2005000704	A	NO 2005-704	20050209
NO 2005000705	A	NO 2005-705	20050209
NO 2005000755	A	NO 2005-755	20050211
US 20060059584	A1	US 2005-524971	20050218
AU 2003287944	A8	AU 2003-287944	20030820

FILING DETAILS:

PATENT NO	KIND		PATENT NO	
AU 2003260423	A1	Based on	WO 2004018385	A
AU 2003258622	A1	Based on	WO 2004018688	A
AU 2003258623	A1	Based on	WO 2004018693	A
EP 1532264	A2	Based on	WO 2004018693	A
AU 2003260424	A1	Based on	WO 2004018694	A
EP 1532265	A2	Based on	WO 2004018694	A
AU 2003253416	A1	Based on	WO 2004018695	A
EP 1532266	A2	Based on	WO 2004018695	A
EP 1532263	A2	Based on	WO 2004022765	A
AU 2003287944	A8	Based on	WO 2004022765	A

PRIORITY APPLN. INFO: **DE 2002-10238980 20020820**

DE 2002-10238978 20020820

DE 2002-10238979 20020820

DE 2002-10253112 20021113

DE 2002-10258971 20021216

AN 2004-215842 [21] WPIX

CR 2004-215840; 2004-215841; 2004-295424; 2004-489014; 2004-554601;  
2005-202657; 2005-202658; 2005-202663

AB DE 10238980 A1 UPAB: 20060121

NOVELTY - Method for **preparing** ketocarotenoids (I) by culturing genetically modified plants that, in comparison with the wild-type, have altered ketolase (II) activity in the petals.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) nucleic acid construct containing a nucleic acid (III) that encodes (II), linked functionally to a flower- or petal-specific promoter;

(2) double-stranded (ds) RNA (IV) that comprises a sense strand, including a sequence that is essentially identical with at least part of the RNA epsilon-cyclase (eC) transcript or the promoter region of the eC gene, and an antisense strand that is essentially complementary to the sense strand;

(3) transgenic expression cassette (EC) comprising a plant-functional promoter linked to a nucleic acid (V) that transcribes (IV);

(4) genetically altered plant in which activity of (II) in the petals is:

(a) increased, if already present in the wild-type; or

(b) introduced if absent from the wild type;

(5) genetically altered plant that has chromoplasts in the petals and contains at least one transgenic nucleic acid that encodes (II); and

(6) method for **preparing** plants of (4) and (5).

USE - The modified plants with increased (II) activity are used:

(a) as ornamentals;

(b) as food or **animal feed**; and

(c) for **preparation** of (I)-containing extracts or for **preparing** food/**feed** supplements (claimed), e.g., especially where (I) is **astaxanthin**, as a pigment for coloring trout, salmon and shrimps.

ADVANTAGE - The transgenic plants have increased content of (I).

L87 ANSWER 34 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2004-215840 [21] WPIX  
 CROSS REFERENCE: 2004-215841; 2004-215842; 2004-295424; 2004-489014;  
 2004-554601; 2005-202657; 2005-202658; 2005-202663  
 DOC. NO. CPI: C2004-085423 [21]  
 DOC. NO. NON-CPI: N2004-171007 [21]  
 TITLE: Method for **preparing** ketocarotenoids, useful  
 e.g. as food or **feed** supplements, by  
 increasing, or introducing, ketolase activity in the  
 fruits of transgenic plants, also new nucleic acid  
 constructs  
 DERWENT CLASS: D13; D16; E15; P13  
 INVENTOR: SCHOMAELE W  
 PATENT ASSIGNEE: (SUNG-N) SUNGENE GMBH & CO KGAA  
 COUNTRY COUNT: 1

PATENT INFO ABBR.:

PATENT NO	KIND DATE	WEEK	LA	PG	MAIN IPC
DE 10238978	A1 20040304	(200421)*	DE	77[9]	

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 10238978 A1		DE 2002-10238978	20020820

PRIORITY APPLN. INFO: **DE 2002-10238978 20020820**

AN 2004-215840 [21] WPIX

CR 2004-215841; 2004-215842; 2004-295424; 2004-489014; 2004-554601;  
2005-202657; 2005-202658; 2005-202663

AB DE 10238978 A1 UPAB: 20060121

NOVELTY - Method for **preparing** ketocarotenoids (I) by culturing genetically modified plants that, in comparison with the wild-type, have altered ketolase (II) activity in the fruits.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) nucleic acid construct comprising a fruit-specific promoter linked functionally to a sequence that encodes (II);

(2) genetically modified plants in which the fruits have (II) activity; and

(3) method for **preparing** the plants of (2).

USE - The modified plants with increased (II) activity are used:

(i) as ornamentals;

(ii) as food or **animal feed**; and

(iii) for **preparation** of (I)-containing extracts or for **preparing** food/**feed** supplements (claimed), e.g., especially where (I) is **astaxanthin**, as a pigment for coloring trout, salmon and shrimps.

ADVANTAGE - The transgenic plants produce fruits with increased content of (I).

L87 ANSWER 35 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
ACCESSION NUMBER: 2003-853950 [79] WPIX  
DOC. NO. CPI: C2003-240887 [79]  
TITLE: Production of canthaxanthin for use in foods, drinks and **animal feeds** comprises culturing its producing mutant obtained from mutagenized **astaxanthin**-producing microorganism  
DERWENT CLASS: B05; D13; D16  
INVENTOR: HIRASAWA K; MIZUTA H; MIZUTA Y; TSUBOKURA A  
PATENT ASSIGNEE: (NIOC-C) NIPPON OIL CO LTD; (NIOC-C) NIPPON OIL CORP  
COUNTRY COUNT: 102

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2003087358	A1	20031023	(200379)*	JA	20[0]	
JP 2003304875	A	20031028	(200380)	JA	8	
AU 2003236292	A1	20031027	(200436)	EN		
EP 1496115	A1	20050112	(200504)	EN		
NO 2003004597	A	20031110	(200540)	NO		
CN 1659279	A	20050824	(200604)	ZH		
US 20060121556	A1	20060608	(200639)	EN		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003087358 A1		WO 2003-JP4398	20030407
JP 2003304875 A		JP 2002-112240	20020415

AU 2003236292 A1  
 CN 1659279 A  
 EP 1496115 A1  
 EP 1496115 A1  
 NO 2003004597 A  
 NO 2003004597 A  
 US 20060121556 A1  
 US 20060121556 A1

AU 2003-236292 20030407  
 CN 2003-813465 20030407  
 EP 2003-746432 20030407  
 WO 2003-JP4398 20030407  
 WO 2003-JP4398 20030407  
 NO 2003-4597 20031014  
 WO 2003-JP4398 20030407  
 US 2004-511345 20041015

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2003236292 A1	Based on	WO 2003087358 A
EP 1496115 A1	Based on	WO 2003087358 A

PRIORITY APPLN. INFO: **JP 2002-112240 20020415**

AN 2003-853950 [79] WPIX

AB WO 2003087358 A1 UPAB: 20060120

NOVELTY - A **process** for producing canthaxanthin comprises:

- (1) mutagenizing an **astaxanthin**-producing microorganism;
- (2) selecting a mutant with a high-canthaxanthin-yielding strain;
- (3) culturing the obtained canthaxanthin-producing strain; and
- (4) collecting canthaxanthin or a carotenoid mixture containing canthaxanthin from the obtained culture medium.

DETAILED DESCRIPTION - A **process** for producing canthaxanthin comprises:

- (1) mutagenizing an **astaxanthin**-producing microorganism, the base sequence of a DNA corresponding to 16S ribosomal RNA of which is substantially homologous with the base sequence of (I) of 1452 base pairs;
- (2) selecting a mutant with a ratio (mass %) of the thus produced canthaxanthin to the total carotenoid yield higher than that of the parent strain;
- (3) culturing the obtained canthaxanthin-producing strain; and
- (4) collecting canthaxanthin or a carotenoid mixture containing canthaxanthin from the obtained culture medium.

The **astaxanthin**-producing microorganism is selected from E 396 strain (FERM BP-4283) or A-581-1 strain (FERM BP-4671) and their mutant.

USE - Canthaxanthin is used in foods, drinks and **animal feeds**.

ADVANTAGE - The canthaxanthin is highly safe and cheap to produce with stable supply.

L87 ANSWER 36 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2003-767261 [72] WPIX  
 DOC. NO. CPI: C2003-210751 [72]  
 TITLE: Fermentative production of **astaxanthin**, for use  
 e.g. as food or **feed** additive, by culturing  
 selected Xanthophyllomyces dendrorhous yeast strains  
 DERWENT CLASS: D13; D16; E24  
 INVENTOR: BARREDO F J L; BARREDO FUENTE J L; CABRI W; CEZON E P; DE  
 LA FUENTE M J L; DE LA FUENTE MORENO J L; DIEZ G B; DIEZ  
 GARCIA B; FUENTE J L B; GARCIA B D; MARCOS R A T; MARCOS  
 RODRIGUEZ A T; OTERO C R; PEIRO C E; PEIRO CEZON E;  
 RODRIGUEZ A T M; RODRIGUEZ O C; RODRIGUEZ OTERO C;  
 RODRIGUEZ S M; RODRIGUEZ SAIZ M; SAIZ M R; SANCHEZ C S;  
 SCHLEISSNER S C; SCHLEISSNER SANCHEZ C  
 PATENT ASSIGNEE: (ANTI-C) ANTIBIOTICOS SAU; (BARR-I) BARREDO F J L;  
 (CABR-I) CABRI W; (DFUE-I) DE LA FUENTE M J L; (DIEZ-I)  
 DIEZ G B; (MARC-I) MARCOS R A T; (PEIR-I) PEIRO C E;  
 (RODR-I) RODRIGUEZ O C; (RODR-I) RODRIGUEZ S M; (SCHL-I)

COUNTRY COUNT: SCHLEISSNER S C; (VITA-N) VITATENE SA  
101

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2003066875	A1	20030814	(200372)*	ES	57[9]	
AU 2003205786	A1	20030902	(200425)	EN		
ES 2203315	A1	20040401	(200425)	ES		
EP 1479777	A1	20041124	(200477)	EN		
BR 2003007559	A	20050104	(200510)	PT		
US 20050124032	A1	20050609	(200539)	EN		
ES 2203315	B1	20050616	(200541)	ES		
JP 2005522193	W	20050728	(200549)	JA	30	
CN 1628177	A	20050615	(200563)	ZH		
MX 2004007367	A1	20050401	(200571)	ES		

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003066875	A1	WO 2003-ES63	20030203
ES 2203315	A1	<b>ES 2002-257</b>	<b>20020204</b>
ES 2203315	B1	<b>ES 2002-257</b>	<b>20020204</b>
AU 2003205786	A1	AU 2003-205786	20030203
BR 2003007559	A	BR 2003-7559	20030203
CN 1628177	A	CN 2003-803281	20030203
EP 1479777	A1	EP 2003-702662	20030203
JP 2005522193	W	JP 2003-566223	20030203
EP 1479777	A1	WO 2003-ES63	20030203
BR 2003007559	A	WO 2003-ES63	20030203
US 20050124032	A1	WO 2003-ES63	20030203
JP 2005522193	W	WO 2003-ES63	20030203
MX 2004007367	A1	WO 2003-ES63	20030203
MX 2004007367	A1	MX 2004-7367	20040729
US 20050124032	A1	US 2004-501364	20041206

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2003205786	A1	WO 2003066875 A
EP 1479777	A1	WO 2003066875 A
BR 2003007559	A	WO 2003066875 A
JP 2005522193	W	WO 2003066875 A
MX 2004007367	A1	WO 2003066875 A

PRIORITY APPLN. INFO: **ES 2002-257 20020204**

AN 2003-767261 [72] WPIX

AB WO 2003066875 A1 UPAB: 20060120

NOVELTY - Fermentative production of **astaxanthin** (I) involves culturing selected strains of *Xanthophyllomyces dendrorhous* (XD) (or their mutants or transformed derivatives) capable of producing at least 4000 ppm of (I) in a matrix during 6-7 days of fermentation.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(a) XD biomass with nutritive and pigmenting characteristics, for use in **animal feed** or human food, obtained by the above **process**; and

(b) **animal feed** or human food components consisting of or containing the biomass as in (a).

USE - (I) is a red natural carotenoid pigment, useful e.g. as a food dye or as a salmon **feed** additive for intensifying the salmon flesh coloration. The (I)-containing XD biomass obtained by the present **process** can be used directly as nutritive and pigmenting additive for **animal feed** or human food.

ADVANTAGE - The selected XD mutant strains show increased production of (I) and reduced accumulation of other carotenoids, allowing industrial production of (I) at reduced cost. Specifically at least 425 mg/l of (I) is produced in 7-9 days; at least 50 g/l (especially at least 80 g/l) of dry cell material is produced; and at least 5000 mug of (I) is produced in 7-9 days per g of dry cell weight (all claimed). The claimed XD biomass for food/**feed** use specifically contains at least 5000 mug/g (I), at least 7400 mug total carotenoids, at least 5000 mug (I), at least 15% protein and at least 15% carbohydrate.

L87 ANSWER 37 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2003-663586 [62] WPIX  
 DOC. NO. CPI: C2003-180317 [62]  
 TITLE: New **astaxanthin** derivatives for use as  
 pigmenting carotenoid for **feed** for aquatic  
 animals  
 DERWENT CLASS: D13; E24  
 INVENTOR: GLOOR A; SIMON W  
 PATENT ASSIGNEE: (STAM-C) DSM IP ASSETS BV; (GLOO-I) GLOOR A; (HOFF-C)  
 ROCHE VITAMINS AG; (SIMO-I) SIMON W  
 COUNTRY COUNT: 99

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2003066583	A1	20030814	(200362)*	EN	24[0]	
AU 2003205699	A1	20030902	(200425)	EN		
EP 1474388	A1	20041110	(200473)	EN		
KR 2004083437	A	20041001	(200511)	KO		
US 20050096477	A1	20050505	(200531)	EN		
JP 2005517010	W	20050609	(200538)	JA	20	
CN 1628097	A	20050615	(200563)	ZH		
MX 2004007557	A1	20050101	(200564)	ES		
NO 2004003728	A	20040906	(200612)	NO		
IN 2004001714	P4	20060224	(200619)	EN		

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003066583	A1	WO 2003-EP873	20030129
AU 2003205699	A1	AU 2003-205699	20030129
CN 1628097	A	CN 2003-803401	20030129
EP 1474388	A1	EP 2003-702554	20030129
JP 2005517010	W	JP 2003-565958	20030129
EP 1474388	A1	WO 2003-EP873	20030129
US 20050096477	A1	WO 2003-EP873	20030129
JP 2005517010	W	WO 2003-EP873	20030129
MX 2004007557	A1	WO 2003-EP873	20030129
MX 2004007557	A1	MX 2004-7557	20040804
KR 2004083437	A	KR 2004-712137	20040805
US 20050096477	A1	US 2004-503696	20040805
NO 2004003728	A	NO 2004-3728	20040906
IN 2004001714	P4	WO 2003-EP873	



## FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2003205699 A1	Based on	WO 2003066583 A
EP 1474388 A1	Based on	WO 2003066583 A
JP 2005517010 W	Based on	WO 2003066583 A
MX 2004007557 A1	Based on	WO 2003066583 A

PRIORITY APPLN. INFO: **EP 2002-2728 20020206**

AN 2003-663586 [62] WPIX

AB WO 2003066583 A1 UPAB: 20060120

NOVELTY - **Astaxanthin** derivatives are new.DETAILED DESCRIPTION - **Astaxanthin** derivatives of formula (I) are new.

R = NH-CH(R1)-COOR2, OR3, or -(Y)n-Z;

R1 = H or residue of protein-forming amino acid;

R2 = 1-6C alkyl or 3-8C cycloalkyl;

R3 = 1-12C alkyl or 3-8C cycloalkyl;

n = 0 or 1;

Y = 1-7C alkylene or 2-7C alkenylene;

R4 = H or acetyl;

R5 = H or 1-6C alkyl;

R6 = 1-6C alkyl, aryl or heteroaryl;

R7 = H, 1-6C alkyl or acetyl;

R8 = 1-6C alkyl;

Hal- = halogen ion.

When n is 0, then Z is 3-8C cycloalkyl, -CH(C6H5)OR4, -COR5, or -CH2N+(CH3)3Hal-; when n is 1, Z is amino, -O-COR6, OR7 or -SR8; and when n is 0 or 1, then Z is aryl, heteroaryl, -COOR5 or -CH(CH3)OR4.

INDEPENDENT CLAIMS are also included for:

(a) a formulation containing **astaxanthin** derivative as carotenoid; and

(b) **process** of producing a formulation comprising dissolving the **astaxanthin** derivative in a plant or vegetable oil or fat, and/or in an organic solvent, emulsifying the solution with an aqueous solution of protective colloid, at least partially removing the solvent and water afford a concentrated emulsion to finally produce a formulation for aquatic **animal feeds**.

USE - For use as pigmenting carotenoid for **feed** for aquatic animals (claimed).

ADVANTAGE - The inventive **astaxanthin** derivatives have improved stability during extrusion at elevated temperatures as required in **feed** manufacture and during the storage of manufactured **feed**.

L87 ANSWER 38 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2003-256649 [25] WPIX  
 DOC. NO. CPI: C2003-066671 [25]  
 TITLE: Carotenoid composition for use as colorants or additives  
 for, e.g. food, comprises sugar beet pectin,  
 triglyceride, and carotenoid  
 DERWENT CLASS: B04; D13; D17; D21  
 INVENTOR: BECK M; BECK M I; KUHN Y K; LEUENBERGER B  
 PATENT ASSIGNEE: (BECK-I) BECK M I; (STAM-C) DSM IP ASSETS BV; (KUHN-I)  
 KUHN Y K; (LEUE-I) LEUENBERGER B; (HOFF-C) ROCHE VITAMINS  
 AG  
 COUNTRY COUNT: 97

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2003015537	A1	20030227	(200325)*	EN	18[0]	
EP 1416810	A1	20040512	(200431)	EN		
BR 2002009860	A	20040615	(200440)	PT		
AU 2002331210	A1	20030303	(200452)	EN		
KR 2004043189	A	20040522	(200460)	KO		
US 20040235787	A1	20041125	(200478)	EN		
JP 2004538351	W	20041224	(200502)	JA	28	
MX 2004001079	A1	20040601	(200504)	ES		
CN 1535115	A	20041006	(200506)	ZH		
IN 2004000305	P4	20051223	(200604)	EN		

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003015537	A1	<b>WO 2002-EP8819</b>	<b>20020807</b>
AU 2002331210	A1	<b>AU 2002-331210</b>	<b>20020807</b>
BR 2002009860	A	<b>BR 2002-9860</b>	<b>20020807</b>
CN 1535115	A	<b>CN 2002-809784</b>	<b>20020807</b>
EP 1416810	A1	<b>EP 2002-767339</b>	<b>20020807</b>
EP 1416810	A1	<b>WO 2002-EP8819</b>	<b>20020807</b>
BR 2002009860	A	<b>WO 2002-EP8819</b>	<b>20020807</b>
US 20040235787	A1	<b>WO 2002-EP8819</b>	<b>20020807</b>
JP 2004538351	W	<b>WO 2002-EP8819</b>	<b>20020807</b>
MX 2004001079	A1	<b>WO 2002-EP8819</b>	<b>20020807</b>
JP 2004538351	W	<b>JP 2003-520307</b>	<b>20020807</b>
MX 2004001079	A1	MX 2004-1079	20040203
KR 2004043189	A	KR 2004-702121	20040212
US 20040235787	A1	US 2004-486705	20040212
IN 2004000305	P4	WO 2002-EP8819	
IN 2004000305	P4	IN 2004-CN305	20040213

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
EP 1416810	A1	Based on WO 2003015537 A
BR 2002009860	A	Based on WO 2003015537 A
AU 2002331210	A1	Based on WO 2003015537 A
JP 2004538351	W	Based on WO 2003015537 A
MX 2004001079	A1	Based on WO 2003015537 A

PRIORITY APPLN. INFO: **EP 2001-119429 20010813**

AN 2003-256649 [25] WPIX

AB WO 2003015537 A1 UPAB: 20050903

NOVELTY - A carotenoid composition comprises sugar beet pectin, triglyceride, carotenoid, and optional adjuvants and/or excipients.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a **process** for the **preparation** of the inventive composition comprising homogenizing, in an aqueous solution or colloidal solution of the pectin and optional water-soluble excipients and adjuvants, a solution or dispersion of the carotenoid and optional fat-soluble adjuvants in a triglyceride and, if required, converting the dispersion obtained into a powder.

USE - For use as colorants or additives for food, beverages, **animal feeds**, cosmetics or drugs (claimed).

ADVANTAGE - The novel carotenoid composition can be **prepared** by **processing** the ingredients in a manner known per se for the **preparation** of water-soluble or dispersible carotenoid compositions.

L87 ANSWER 39 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2004-106173 [11] WPIX  
 DOC. NO. CPI: C2004-042981 [11]  
 DOC. NO. NON-CPI: N2004-084427 [11]  
 TITLE: Increasing carotenoid production in a seed from a host plant, for use nutritionally and providing a source of more stable oils, comprises transforming the host plant with a construct  
 DERWENT CLASS: B05; C06; D16; E15; P13  
 INVENTOR: BHAT B G; BODDUPALLI S S; KISHORE G M; RANGWALA S H; SHEWMAKER C K; VENKATRAMESH M  
 PATENT ASSIGNEE: (CALJ-C) CALGENE LLC  
 COUNTRY COUNT: 1

## PATENT INFO ABBR.:

PATENT NO	KIND DATE	WEEK	LA PG	MAIN IPC
US 6653530	B1 20031125	(200411)*	EN 84[18]	

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 6653530	B1	US 1998-23587	19980213

## PRIORITY APPLN. INFO: US 1998-23587 19980213

AN 2004-106173 [11] WPIX

AB US 6653530 B1 UPAB: 20060121

NOVELTY - Increasing carotenoid production in a seed from a host plant comprises transforming the host plant with a construct comprising as operably linked components, a seed-preferred transcriptional initiation region, a nucleic acid sequence encoding a plastid transit peptide, an Erwinia uredora DNA coding sequence encoding phytoene synthase and a transcriptional termination region.

DETAILED DESCRIPTION - Increasing carotenoid production in a seed from a host plant comprises transforming the host plant with a construct comprising as operably linked components, a seed-preferred transcriptional initiation region, a nucleic acid sequence encoding a plastid transit peptide, an Erwinia uredora DNA coding sequence encoding phytoene synthase and a transcriptional termination region. The transformed plant produces seeds, where the increased carotenoid production results in an increase in total carotenoid levels in the seed as compared to native carotenoid levels.

## INDEPENDENT CLAIMS are also included for:

(1) a method for producing a carotenoid compound in a seed comprises obtaining a transformed plant which produces the seed, the plant having and expressing in its genome: (i) an Erwinia uredora DNA coding sequence encoding phytoene synthase, operably linked to a nucleic acid sequence encoding a plastid transit peptide and a seed-preferred transcriptional initiation region and an Erwinia uredora DNA coding sequence encoding phytoene desaturase operably linked to a nucleic acid sequence encoding a plastid transit peptide; (ii) an Erwinia uredora DNA coding sequence encoding phytoene synthase, operably linked to a nucleic acid sequence encoding a plastid transit peptide and a seed-preferred transcriptional initiation region and a Brassica napus lycopene epsilon-cyclase DNA coding sequence operably linked in antisense

orientation to a seed-preferred transcriptional initiation region, where the lycopene epsilon-cyclase DNA coding sequence results in inhibition of a carotenoid biosynthesis gene; (iii) an *Erwinia uredora* DNA coding sequence encoding phytoene synthase, operably linked to a nucleic acid sequence encoding a plastid transit peptide and a seed-preferred transcriptional initiation region or (iv) an *Erwinia uredora* DNA coding sequence encoding geranylgeranyl pyrophosphate synthase, operably linked to a nucleic acid sequence encoding a plastid transit peptide and a seed-preferred transcriptional initiation region, where the method results in an increase in the level of the carotenoid compound in the seed as compared to native carotenoid levels;

(2) a transformed seed, where the seed was transformed with: (i) an *Erwinia uredora* DNA coding sequence encoding phytoene synthase, operably linked to a seed-preferred transcriptional initiation region and where the transformed seed has altered carotenoid levels as compared to native carotenoid levels or a seed produced by the method of (1); (ii) an *Erwinia uredora* DNA coding sequence encoding geranylgeranyl pyrophosphate synthase, operably linked to a seed-preferred transcriptional initiation region and where the transformed seed has altered carotenoid levels as compared to native carotenoid levels; or (iii) an *Erwinia uredora* DNA coding sequence encoding phytoene synthase, operably linked to a first seed-preferred transcriptional initiation region and an *Erwinia uredora* DNA coding sequence encoding phytoene desaturase operably linked to a second seed-preferred transcriptional initiation region, where the transformed seed has altered carotenoid levels as compared to native carotenoid levels; and

(3) plants produced by the method of (1).

ACTIVITY - Cytostatic; Dermatological; Ophthalmological.

MECHANISM OF ACTION - None given.

USE - The method is useful for increasing carotenoid production in seed from a host plant. Altered seed products are useful nutritionally and provides a source of more stable oils. Carotenoids are valuable source of alpha- and beta-carotenes or useful as supplements, particularly vitamin supplements. Food oil with high levels of alpha and beta-carotene levels is useful in preventing Vitamin A deficiency resulting to night blindness and in preventing effects against certain kinds of cancers. The carotenoids are useful as vegetable oil based food products and food ingredients, as **feed** additives in **animal feeds** and as food colorant. Phytoene is useful in treating skin disorders. Lutein is useful in preventing macular degeneration of the eye.

L87 ANSWER 40 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2003-156856 [15] WPIX  
 DOC. NO. CPI: C2003-040768 [15]  
 TITLE: New isolated polypeptide used for isoprenoid production, includes amino acid sequence having e.g. mevalonate kinase, phosphomevalonate kinase or diphosphomevalonate decarboxylase activity  
 DERWENT CLASS: B05; D13; D16; E15; E24  
 INVENTOR: BERRY A; BRETZEL W; HUEMBELIN M; HUMBELIN M; LOPEZ-ULIBARRI R; MAYER A F; YELISEEV A; YELISEEV A A  
 PATENT ASSIGNEE: (STAM-C) DSM IP ASSETS BV; (HOFF-C) ROCHE VITAMINS AG; (HOFF-C) ROCHE VITAMINS INC  
 COUNTRY COUNT: 97

PATENT INFO ABBR.:

PATENT NO	KIND DATE	WEEK	LA	PG	MAIN IPC
WO 2002099095	A2 20021212	(200315)*	EN	307	[0]
US 20030148416	A1 20030807	(200358)	EN		

EP 1392824	A2	20040303 (200417)	EN
KR 2004010683	A	20040131 (200436)	KO
AU 2002316966	A1	20021216 (200452)	EN
JP 2004527265	W	20040909 (200459)	JA 403
CN 1630718	A	20050622 (200563)	ZH
US 20050266518	A1	20051201 (200579)	EN
US 6989257	B2	20060124 (200607)	EN

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2002099095	A2	<b>WO 2002-EP6171</b>	<b>20020605</b>
US 20030148416	A1 Provisional	<b>US 2001-296299P</b>	<b>20010606</b>
US 20050266518	A1 Provisional	<b>US 2001-296299P</b>	<b>20010606</b>
AU 2002316966	A1	<b>AU 2002-316966</b>	<b>20020605</b>
CN 1630718	A	<b>CN 2002-811380</b>	<b>20020605</b>
EP 1392824	A2	<b>EP 2002-745362</b>	<b>20020605</b>
US 20030148416	A1	<b>US 2002-166225</b>	<b>20020605</b>
US 20050266518	A1 Div Ex	<b>US 2002-166225</b>	<b>20020605</b>
EP 1392824	A2	<b>WO 2002-EP6171</b>	<b>20020605</b>
JP 2004527265	W	<b>WO 2002-EP6171</b>	<b>20020605</b>
JP 2004527265	W	<b>JP 2003-502205</b>	<b>20020605</b>
KR 2004010683	A	KR 2003-715938	20031205
US 20050266518	A1	US 2005-129143	20050513
US 6989257	B2 Provisional	<b>US 2001-296299P</b>	<b>20010606</b>
US 6989257	B2	<b>US 2002-166225</b>	<b>20020605</b>

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
EP 1392824	A2 Based on	WO 2002099095 A
AU 2002316966	A1 Based on	WO 2002099095 A
JP 2004527265	W Based on	WO 2002099095 A

PRIORITY APPLN. INFO: **US 2001-296299P 20010606****US 2002-166225 20020605**

US 2005-129143 20050513

AN 2003-156856 [15] WPIX

AB WO 2002099095 A2 UPAB: 20060202

NOVELTY - New isolated polypeptide (I) includes amino acid sequences having the activity of hydroxymethylglutaryl Coenzyme-A (HMGCoA) reductase, isopentenyl diphosphate isomerase, HMG-CoA synthase, mevalonate kinase, phosphomevalonate kinase or diphosphomevalonate decarboxylase.

DETAILED DESCRIPTION - New isolated polypeptide (I) comprises:

(a) a sequence (S1) comprising 340, 349, 388, 378, 305 or 332 amino acids, a fragment of S1 having the activity of (E), or a polypeptide encoded by a polynucleotide that hybridizes under stringent conditions to a hybridization probe comprising at least 30 consecutive nucleotides of a sequence (S2) comprising 9066 nucleotides or its complement, where the polypeptide has the activity of (E);

(b) a sequence (S3) comprising 287 amino acids, a fragment having the activity of farnesyl diphosphate (FPP) synthase, or a polypeptide encoded by a polynucleotide that hybridizes under stringent conditions to a hybridization probe comprising at least 30 consecutive nucleotides spanning positions 295-1158 of a sequence (S4) comprising 1612 nucleotides or its complement, where the polypeptide has the activity of FPP synthase;

(c) a sequence (S5) comprising 142 amino acids, a fragment having the activity of 1-deoxyxylulose-5-phosphate synthase (DXPS), a polypeptide encoded

by a polynucleotide that hybridizes under stringent conditions to a hybridization probe comprising at least 30 consecutive nucleotides spanning positions 1185-1610 of S4 or its complement, where the polypeptide has the activity of DXPS;

(d) a sequence (S6) comprising 390 amino acids, a fragment having the activity of acetyl-CoA acetyltransferase or a polypeptide encoded by a polynucleotide that hybridizes under stringent conditions to a hybridization probe comprising at least 30 consecutive nucleotides spanning positions 1-1170 of a sequence (S7) comprising 1980 nucleotides or its complement, where the polypeptide has the activity of acetyl-CoA acetyltransferase;

(e) a sequence (S8) comprising 240 amino acids, a fragment having the activity of acetoacetyl-CoA reductase, or a polypeptide encoded by a polynucleotide that hybridizes under stringent conditions to a hybridization probe comprising at least 30 consecutive nucleotides spanning positions 1258-1980 of S7 or its complement, where the polypeptide has the activity of acetoacetyl-CoA reductase; or

(f) a fragment of at least 30 contiguous amino acid residues of S1, S3, S5, S6 or S8, or a conservatively modified variant of S1, S3, S5, S6 or S8.

All the sequences are fully defined in the specification. (E) Comprises HMGCoA reductase, isopentenyl diphosphate isomerase, HMG-CoA synthase, mevalonate kinase, phosphomevalonate kinase or diphosphomevalonate decarboxylase.

INDEPENDENT CLAIMS are also included for the following:

(1) an isolated polynucleotide sequence (II) comprising S2, S4 or S7, variants of S2, S4 or S7 containing at least one substitution of Paracoccus sp. strain R1534 codon usage table, fragments of S2 that encode a polypeptide having an activity of (E), fragments of S4 that encode a polypeptide having FPP synthase activity, 1-deoxy-D-xylulose-5-phosphate synthase activity or XseB activity, or fragments of S7 encoding a polypeptide having acetoacetyl CoA reductase or acetyl-CoA acetyl transferase, or a polynucleotide sequence that hybridize under stringent conditions to a hybridization probe consisting of at least 30 contiguous nucleotides of S2, S4 or S7, or its complement, where the polynucleotide encodes a polypeptide having the activity of (E);

(2) an expression vector (III) comprising (II), or pBBR-K-mev-op16-1, pBBR-K-mev-op16-2, pDS-mvaA, pDS-idi, pDS-hcs, pDS-mvk, pDS-pmk, pDs-mvd, pDS-His-mvaA, pDS-His-idi, pDS-His-hcs, pDS-His-mvk, pDS-His-pmk, pDs-His-mvd, pBBR-K-Zea4, pBBR-K-Zea4-up, pBBR-K-Zea4-down, pBBR-K-PcrtE-crtE-3, pBBR-tK-PcrtE-mvaA, pBBR-tK-PcrtE-idi, pBBR-tK-PcrtE-hcs, pBBR-tK-PcrtE-mvk, pBBR-tK-PcrtE-pmk, pBBR-tK-PcrtE-mvd, pBBR-K-PcrtE-mvaA-crtE-3, pDS-His-phaA, pBBR-K-PcrtE-crtW, pBBR-K-PcrtE-crtWZ and/or pBBR-K-PcrtE-crtZW;

(3) a cultured cell (IV) containing (II), or (III), or progeny of the cell, where the cell expresses a polypeptide encoded by the polynucleotide sequence;

(4) production of a carotenoid-producing cell;

(5) engineering a bacterium to produce an isoprenoid compound which comprises culturing a parent bacterium in a medium permitting expression of an isoprenoid compound and selecting a mutant bacterium from the culture medium that produces 1.1-1000 times more isoprenoid compound than the parent bacterium, introducing an expression vector comprising S4 operably linked to an expression control sequence into the mutant bacterium and selecting a bacterium that contains the expression vector and produces at least 1.1 times more isoprenoid compound than the selected mutant, and

(6) a microorganism of the genus Paracoccus having a characteristic selected from:

(a) a sequence similarity to a sequence comprising 1404 nucleotides fully defined in the specification of greater than 97% using a similarity matrix obtained from a homology calculation using GenCompar v.2.0 software with a gap penalty of 0%;

(b) a homolog to strain R-1512, R1534, R114 or R-1506 of greater than 70% using DNA:DNA hybridization at 81.5 degrees C;

(c) a G+C content of its genomic DNA that varies less than 1% from the G+C content of the genomic DNA of R114, R-1512, R1534 and R-1506;

(d) an average DNA fingerprint that clusters at 58% similarity to strains R-1512, R1534, R114 and R-1506 using the arbitrary fragment length polymorphism (AFLP) **procedure**, with the proviso that the microorganism is not *Paracoccus* sp. (MBIC3966);

(e) 18:1w7c comprising at least 75% of the total fatty acids of the cell membranes;

(f) an inability to use adonitol, i-erythritol, gentiobiose, beta-methylglucoside, D-sorbitol, xylitol and quinic acid as carbon sources for growth;

(g) an ability to use L-asparagine and L-aspartic acid as carbon sources for growth, with the proviso that the microorganism is not *Paracoccus* sp. (MBIC3966), or

(h) an ability to grow at 40 degrees C, in a medium having 8% NaCl of pH 9.1, and a yellow-orange colony pigmentation, with the proviso that the microorganism is not *Paracoccus* sp. (MBIC3966).

ACTIVITY - None given in the source material.

MECHANISM OF ACTION - None given in the source material.

USE - (IV) Is useful for producing a carotenoid (phytoene, lycopene, beta-carotene, zeaxanthin, canthaxanthin, **astaxanthin**, adonixanthin, cryptoxanthin, echinenone or adonirubin) by culturing the cell under conditions permitting expression of the polypeptide encoded by the polynucleotide sequence and isolating the carotenoid from the cell or the medium of the cell (claimed). The carotenoids (C-40 isoprenoid compounds) are used as nutritional supplements, pharmaceuticals, food colorants and pigments for **animal feeds**.

L87 ANSWER 41 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2002-732912 [79] WPIX  
 DOC. NO. CPI: C2002-207484 [79]  
 TITLE: **Astaxanthin**-containing powdery composition,  
 used in **animal feed** for dyeing meat  
 and skin a reddish-color, obtained by drying a suspension  
 comprising ground **astaxanthin**-containing  
 Hematococcus algae, surfactant, antioxidant and filler  
 DERWENT CLASS: D13; E24  
 INVENTOR: FUKAMI T; HOSOKAWA T; SHISHIDO T; TANAKA N  
 PATENT ASSIGNEE: (FUJC-C) FUJI CHEM IND CO LTD; (FUKA-I) FUKAMI T;  
 (HOSO-I) HOSOKAWA T; (SHIS-I) SHISHIDO T; (TANA-I) TANAKA  
 N  
 COUNTRY COUNT: 24

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2002077105	A1	20021003	(200279)*	JA	29[0]	
AU 2002239041	A1	20021008	(200432)	EN		
US 20040091524	A1	20040513	(200432)	EN		
JP 2002576556	X	20040715	(200446)	JA		
US 7064101	B2	20060620	(200641)	EN		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2002077105	A1	WO 2002-JP2789	20020322
AU 2002239041	A1	AU 2002-239041	20020322

JP 2002576556 X	<b>JP 2002-576556 20020322</b>
US 20040091524 A1	<b>WO 2002-JP2789 20020322</b>
JP 2002576556 X	<b>WO 2002-JP2789 20020322</b>
US 20040091524 A1	US 2003-472679 20030918
US 7064101 B2	<b>WO 2002-JP2789 20020322</b>
US 7064101 B2	US 2003-472679 20030918

## FILING DETAILS:

PATENT NO	KIND		PATENT NO	
AU 2002239041	A1	Based on	WO 2002077105	A
JP 2002576556	X	Based on	WO 2002077105	A
US 7064101	B2	Based on	WO 2002077105	A

PRIORITY APPLN. INFO: **JP 2001-81998** **20010322**

AN 2002-732912 [79] WPIX

AB WO 2002077105 A1 UPAB: 20050527

NOVELTY - **Astaxanthin**-containing powdery composition is obtained by drying a suspension comprising ground **astaxanthin** -containing Hematococcus algae, a surfactant, an antioxidant, a filler and water.

USE - The **astaxanthin**-containing powdery composition is used in **feed** for domestic animals such as fish and cows, for re-dyeing meat, skins etc. a reddish-color.

ADVANTAGE - The composition contains stable **astaxanthin**.

L87 ANSWER 42 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

ACCESSION NUMBER: 2003-048446 [05] WPIX

DOC. NO. CPI: C2003-012627 [05]

TITLE: Production of mono- or poly-oxidized xanthophyll, used as food dying agents and **animal feed** additives, comprises oxidizing carotenoid of lower oxidation state than the xanthophyll

DERWENT CLASS: D13; E15; E24

INVENTOR: FLACHER R; QUESNEL Y; RICHARD F; YANNICK Q

PATENT ASSIGNEE: (ADIS-N) ADISSEO FRANCE SAS; (AVET-C) AVENTIS ANIMAL NUTRITION SA; (FLAC-I) FLACHER R; (QUES-I) QUESNEL Y

COUNTRY COUNT: 99

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
EP 1253131	A1	20021030	(200305)*	EN	5[2]	
WO 2002085831	A1	20021031	(200305)	EN		
EP 1392632	A1	20040303	(200417)	EN		
US 20040074843	A1	20040422	(200428)	EN		
AU 2002304635	A1	20021105	(200433)	EN		
KR 2004008161	A	20040128	(200435)	KO		
JP 2004529151	W	20040924	(200463)	JA	19	
CN 1505602	A	20040616	(200465)	ZH		
ZA 2003008182	A	20040929	(200468)	EN	15	
HU 2004002027	A2	20050128	(200519)	HU		
MX 2003009685	A1	20050101	(200564)	ES		
IN 2003001642	P1	20051014	(200582)#	EN		
BR 2002009093	A	20060207	(200612)	PT		
US 7041854	B2	20060509	(200633)	EN		
CN 1246309	C	20060322	(200660)	ZH		
RU 2284992	C2	20061010	(200667)	RU		



MX 239391 B 20060810 (200702) ES  
 EP 1392632 B1 20061220 (200703) EN

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 1253131	A1	EP 2001-109976	20010424
AU 2002304635	A1	AU 2002-304635	20020418
BR 2002009093	A	BR 2002-9093	20020418
CN 1505602	A	CN 2002-808841	20020418
CN 1246309	C	CN 2002-808841	20020418
EP 1392632	A1	EP 2002-732721	20020418
JP 2004529151	W	JP 2002-583362	20020418
WO 2002085831	A1	WO 2002-EP5455	20020418
EP 1392632	A1	WO 2002-EP5455	20020418
US 20040074843	A1	WO 2002-EP5455	20020418
JP 2004529151	W	WO 2002-EP5455	20020418
HU 2004002027	A2	WO 2002-EP5455	20020418
MX 2003009685	A1	WO 2002-EP5455	20020418
BR 2002009093	A	WO 2002-EP5455	20020418
US 7041854	B2	WO 2002-EP5455	20020418
RU 2284992	C2	WO 2002-EP5455	20020418
MX 239391	B	WO 2002-EP5455	20020418
IN 2003001642	P1	WO 2002-EP5455	20020418
RU 2284992	C2	RU 2003-133993	20020418
IN 2003001642	P1	IN 2003-DN1642	20031010
ZA 2003008182	A	ZA 2003-8182	20031021
MX 2003009685	A1	MX 2003-9685	20031022
MX 239391	B	MX 2003-9685	20031022
KR 2004008161	A	KR 2003-713906	20031024
US 20040074843	A1	US 2003-474899	20031202
US 7041854	B2	US 2003-474899	20031202
HU 2004002027	A2	HU 2004-2027	20020418
EP 1392632	B1	EP 2002-732721	20020418
EP 1392632	B1	WO 2002-EP5455	20020418

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
EP 1392632	A1	Based on WO 2002085831 A
AU 2002304635	A1	Based on WO 2002085831 A
JP 2004529151	W	Based on WO 2002085831 A
HU 2004002027	A2	Based on WO 2002085831 A
MX 2003009685	A1	Based on WO 2002085831 A
BR 2002009093	A	Based on WO 2002085831 A
US 7041854	B2	Based on WO 2002085831 A
RU 2284992	C2	Based on WO 2002085831 A
MX 239391	B	Based on WO 2002085831 A
EP 1392632	B1	Based on WO 2002085831 A

PRIORITY APPLN. INFO: EP 2001-109976 20010424

IN 2003-DN1642 20031010

AN 2003-048446 [05] WPIX

AB EP 1253131 A1 UPAB: 20060202

NOVELTY - Production of mono- or poly-oxidized xanthophyll comprises oxidizing carotenoid of lower oxidation state than the xanthophyll with aqueous solution of hydrogen peroxide and organic solvent. The solvent is

immiscible with water, and the oxidation reaction is carried out in the presence of iodine-containing compound.

USE - Used as food dying agents and **animal feed** additives.

ADVANTAGE - The **process** does not involve the use of excess oxidation agents, which are expensive and hazardous.

L87 ANSWER 43 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2002-510771 [55] WPIX  
 CROSS REFERENCE: 2002-576264  
 DOC. NO. CPI: C2002-145227 [55]  
 TITLE: **Preparations** based on water-soluble or  
 -insoluble active agents, for use in foods,  
**animal feed**, pharmaceuticals or  
 cosmetics, are obtained by flocculation together with  
 protein-containing protective colloids  
 DERWENT CLASS: B07; D13; D21; E15; E19  
 INVENTOR: AUWETER H; BOHN H; HINZ W; LUDDECKE E; LUEDDECKE E;  
 PFEIFFER A; PFEIFFER A M; RUNGE F  
 PATENT ASSIGNEE: (AUWE-I) AUWETER H; (BADI-C) BASF AG; (BOHN-I) BOHN H;  
 (HINZ-I) HINZ W; (LUDD-I) LUDDECKE E; (PFEI-I) PFEIFFER  
 A; (RUNG-I) RUNGE F  
 COUNTRY COUNT: 33

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
EP 1213013	A2	20020612	(200255)*	DE	27[0]	
BR 2001005753	A	20020702	(200255)	PT		
CA 2363823	A1	20020529	(200255)	EN		
US 20020110599	A1	20020815	(200256)	EN		
AU 2001095146	A	20020530	(200262)	EN		
DE 10059213	A1	20020613	(200262)	DE	18[0]	
JP 2002255931	A	20020911	(200275)	JA	22	
KR 2002042467	A	20020605	(200277)	KO		
CN 1364426	A	20020821	(200281)	ZH		
DE 10129713	A1	20030109	(200312)	DE		
AU 783606	B2	20051117	(200638)	EN		
US 7105176	B2	20060912	(200660)	EN		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 1213013 A2		<b>EP 2001-126756</b>	<b>20011109</b>
DE 10059213 A1		<b>DE 2000-10059213</b>	<b>20001129</b>
DE 10129713 A1		<b>DE 2001-10129713</b>	<b>20010622</b>
US 20020110599 A1		<b>US 2001-988109</b>	<b>20011119</b>
CA 2363823 A1		<b>CA 2001-2363823</b>	<b>20011123</b>
JP 2002255931 A		<b>JP 2001-361568</b>	<b>20011127</b>
AU 2001095146 A		<b>AU 2001-95146</b>	<b>20011128</b>
AU 783606 B2		<b>AU 2001-95146</b>	<b>20011128</b>
KR 2002042467 A		<b>KR 2001-74554</b>	<b>20011128</b>
BR 2001005753 A		<b>BR 2001-5753</b>	<b>20011129</b>
CN 1364426 A		<b>CN 2001-130192</b>	<b>20011129</b>
US 7105176 B2		<b>US 2001-988109</b>	<b>20011119</b>

PRIORITY APPLN. INFO: **DE 2001-10129713 20010622**  
**DE 2000-10059213 20001129**

AN 2002-510771 [55] WPIX

CR 2002-576264

AB EP 1213013 A2 UPAB: 20060120

NOVELTY - Production of solid **preparations** of water-soluble or -insoluble active agents (I) comprises (a) dissolving or dispersing (I) in an aqueous molecularly- or colloidally-dispersed solution of a protein-containing protective colloid; (b) flocculating the protective colloid together with (I) out of the dispersion; and (c) separating the flocculant from the water and converting it into a dry powder.

DETAILED DESCRIPTION - Also included is an INDEPENDENT CLAIM for oily suspensions comprising a disperse phase of (I) covered with protective colloid(s) but free of water-soluble vitamins.

USE - The solid dry powder (or a suspension of it in oil) is used as an additive in the production of foods, **animal feedstuffs**, pharmaceuticals or cosmetics. The additive for **animal feedstuffs** is in the form of pellets and is optionally loaded with an oil suspension.

ADVANTAGE - **Preparations** with a high concentration of the (especially carotenoid) active agent are obtained.

L87 ANSWER 44 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

ACCESSION NUMBER: 2002-600894 [65] WPIX

DOC. NO. CPI: C2002-170012 [65]

TITLE: **Preparation** of dry powder containing carotinoids, useful in food, **feed** and pharmaceuticals, by drying nanodispersion **prepared** using soya protein as protective colloid

DERWENT CLASS: B05; D13; E15

INVENTOR: LUDDECKE E; LUEDDECKE E; PFEIFFER A; PFEIFFER A M; RUNGE F; LUEDDECKE; PFEIFFER; RUNGE

PATENT ASSIGNEE: (BADI-C) BASF AG; (LUDD-I) LUDDECKE E; (PFEI-I) PFEIFFER A; (RUNG-I) RUNGE F

COUNTRY COUNT: 29

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
DE 10104494	A1	20020801	(200265)*	DE	7[0]	
EP 1228705	A2	20020807	(200265)	DE		
US 20020128325	A1	20020912	(200267)	EN		
JP 2002327133	A	20021115	(200306)	JA	7	
CN 1374035	A	20021016	(200311)	ZH		
JP 3694268	B2	20050914	(200560)	JA	11	
US 7070812	B2	20060704	(200644)	EN		
EP 1228705	B1	20060802	(200651)	DE		
DE 50207675	G	20060914	(200661)	DE		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 10104494	A1	DE 2001-10104494	20010131
EP 1228705	A2	EP 2002-1308	20020118
EP 1228705	B1	EP 2002-1308	20020118
JP 2002327133	A	JP 2002-19943	20020129
JP 3694268	B2	JP 2002-19943	20020129
US 20020128325	A1	US 2002-58022	20020129
US 7070812	B2	US 2002-58022	20020129
CN 1374035	A	CN 2002-102590	20020131

DE 50207675 G  
DE 50207675 G

DE 2002-507675 20020118  
EP 2002-1308 20020118

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
JP 3694268	B2 Previous Publ	JP 2002327133 A
DE 50207675	G Based on	EP 1228705 A

PRIORITY APPLN. INFO: DE 2001-10104494 20010131

AN 2002-600894 [65] WPIX

AB DE 10104494 A1 UPAB: 20060120

NOVELTY - **Preparation** of a dry powder (A) of one or more carotinoids (I) comprises:

(i) dispersing (I) in an aqueous molecularly or colloiddally dispersed solution of a mixture of lactose and soya protein (II), as protective colloid; and

(ii) converting the dispersion to powder by removing water (and optionally other solvents used) and then drying, optionally in presence of coating material.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a powder containing (I), produced this way.

ACTIVITY - Anabolic.

MECHANISM OF ACTION - None given.

USE - (A), which have pro-vitamin A activity, are used as additives to foods, pharmaceuticals and **animal feeds**, especially for pigmentation of fish and egg yolks or skin in poultry.

ADVANTAGE - (A) are easily redispersed in aqueous systems with a uniformly fine distribution of (I) particles smaller than 1 micron, forming products of excellent color yield and bioavailability. The dispersions also have practically Newtonian viscosity properties, allowing easy pumping and spray drying. (A) has higher bulk density and stability than syrup-based products. (II) have better compatibility with water-miscible organic solvents than other protective colloids.

L87 ANSWER 45 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
ACCESSION NUMBER: 2002-559052 [60] WPIX  
DOC. NO. CPI: C2002-158833 [60]  
TITLE: Redispersible dry powder containing oxygen-containing carotenoid, useful e.g. as dye in foods, **feed** or pharmaceuticals, **prepared** in presence of partially degraded soya protein as protective colloid  
DERWENT CLASS: B05; D13  
INVENTOR: AUWETER H; HINZ W; LUDDECKE E; LUEDDECKE E; PFEIFFER A; PFEIFFER A M; RUNGE F; AOVITE H; LUDERK E; LUNGE F  
PATENT ASSIGNEE: (AUWE-I) AUWETER H; (BADI-C) BASF AG; (HINZ-I) HINZ W; (LUDD-I) LUDDECKE E; (PFEI-I) PFEIFFER A; (RUNG-I) RUNGE F  
COUNTRY COUNT: 29

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
DE 10064387	A1	20020627	(200260)*	DE	7[0]	
EP 1219292	A1	20020703	(200260)	DE		
US 20020165285	A1	20021107	(200275)	EN		
JP 2002262824	A	20020917	(200276)	JA	7	

CN 1362406	A	20020807 (200304)	ZH
US 6639113	B2	20031028 (200372)	EN
EP 1219292	B1	20041006 (200466)	DE
DE 50103970	G	20041111 (200474)	DE
JP 3595300	B2	20041202 (200480)	JA 11
ES 2228737	T3	20050416 (200528)	ES
CN 1184201	C	20050112 (200620)	ZH

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 10064387 A1		DE 2000-10064387	20001221
DE 50103970 G		DE 2001-503970	20011204
EP 1219292 A1		EP 2001-128813	20011204
EP 1219292 B1		EP 2001-128813	20011204
DE 50103970 G		EP 2001-128813	20011204
ES 2228737 T3		EP 2001-128813	20011204
JP 2002262824 A		JP 2001-383736	20011217
JP 3595300 B2		JP 2001-383736	20011217
US 20020165285 A1		US 2001-15560	20011217
US 6639113 B2		US 2001-15560	20011217
CN 1362406 A		CN 2001-145432	20011221
CN 1184201 C		CN 2001-145432	20011221

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
DE 50103970 G	Based on	EP 1219292 A
ES 2228737 T3	Based on	EP 1219292 A
JP 3595300 B2	Previous Publ	JP 2002262824 A

## PRIORITY APPLN. INFO: DE 2000-10064387 20001221

AN 2002-559052 [60] WPIX  
 AB DE 10064387 A1 UPAB: 20060120

NOVELTY - A dry powder (A) comprising oxygen-containing carotenoid(s) is **prepared** by dispersing (I) in an aqueous molecular dispersion or colloidal solution of a protective colloid (II) ((II) is soya protein with a degree of degradation of more than 5%) and converting the dispersion into (A) by removing the water (and any additional solvent) and drying (optionally in presence of a coating material).

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for the powder (A) obtained by the **process**.

USE - The use of (A) is claimed as an additive for foods, pharmaceuticals and/or **animal feed**. (I) are useful as dyes in foods, **feed** or pharmaceuticals, and canthaxanthin also shows pro-vitamin A activity in salmon. Typically (A) is used as a **feed** additive for pigmenting fish in aquaculture or egg-yolks or broiler skins in poultry rearing.

ADVANTAGE - Use of the partially degraded soya proteins (II) as protective colloids provides powders (A) having improved color strength, cold water redispersibility and (e.g. in the case of fish **feed**) bioavailability. (II) also have good compatibility with water-miscible solvents, allowing the **process** to be carried out economically at high concentrations.

L87 ANSWER 46 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2001-488623 [53] WPIX  
 DOC. NO. CPI: C2001-146631 [53]  
 TITLE: Use of amines and amides for the stabilization of

vegetable oils, marine oils, and single cell oils, oil concentrates and pigments, useful for producing **animal feed** and health products

DERWENT CLASS:

B05; D13; D23; E24

INVENTOR:

AANESEN B A; BREIVIK H; SANNA L I; AANESEN A; SANNA I

PATENT ASSIGNEE:

(AANE-I) AANESEN B A; (BREI-I) BREIVIK H; (NHYD-C) NORSK HYDRO AS; (PRON-N) PRONOVA BIO CARE AS; (SANN-I) SANNA L I

COUNTRY COUNT:

90

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2001046355	A1	20010628	(200153)*	EN	27[6]	
NO 9906411	A	20010625	(200153)	NO		
NO 311041	B1	20011001	(200161)	NO		
AU 2001022386	A	20010703	(200164)	EN		
EP 1240285	A1	20020918	(200269)	EN		
JP 2003518161	W	20030603	(200346)	JA	30	
US 20030144355	A1	20030731	(200354)	EN		
AU 770269	B2	20040219	(200453)	EN		
RU 2235122	C2	20040827	(200459)	RU		
EP 1240285	B1	20050608	(200543)	EN		
DE 60020735	E	20050714	(200549)	DE		
ES 2240221	T3	20051016	(200571)	ES		
DE 60020735	T2	20060518	(200637)	DE		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2001046355	A1	WO 2000-NO439	20001220
NO 9906411	A	NO 1999-6411	19991222
NO 311041	B1	NO 1999-6411	19991222
DE 60020735	E	DE 2000-620735	20001220
EP 1240285	A1	EP 2000-986089	20001220
EP 1240285	B1	EP 2000-986089	20001220
DE 60020735	E	EP 2000-986089	20001220
ES 2240221	T3	EP 2000-986089	20001220
EP 1240285	A1	WO 2000-NO439	20001220
JP 2003518161	W	WO 2000-NO439	20001220
US 20030144355	A1	WO 2000-NO439	20001220
RU 2235122	C2	WO 2000-NO439	20001220
EP 1240285	B1	WO 2000-NO439	20001220
DE 60020735	E	WO 2000-NO439	20001220
AU 2001022386	A	AU 2001-22386	20001220
AU 770269	B2	AU 2001-22386	20001220
JP 2003518161	W	JP 2001-546853	20001220
RU 2235122	C2	RU 2002-119411	20001220
US 20030144355	A1	US 2002-168565	20021107
DE 60020735	T2	DE 2000-620735	20001220
DE 60020735	T2	EP 2000-986089	20001220
DE 60020735	T2	WO 2000-NO439	20001220

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 770269	B2	Previous Publ
DE 60020735	E	Based on
		AU 2001022386
		EP 1240285

ES 2240221	T3	Based on	EP 1240285	A
NO 311041	B1	Previous Publ	NO 9906411	A
AU 2001022386	A	Based on	WO 2001046355	A
EP 1240285	A1	Based on	WO 2001046355	A
JP 2003518161	W	Based on	WO 2001046355	A
AU 770269	B2	Based on	WO 2001046355	A
RU 2235122	C2	Based on	WO 2001046355	A
EP 1240285	B1	Based on	WO 2001046355	A
DE 60020735	E	Based on	WO 2001046355	A
DE 60020735	T2	Based on	EP 1240285	A
DE 60020735	T2	Based on	WO 2001046355	A

PRIORITY APPLN. INFO: **NO 1999-6411 19991222**

AN 2001-488623 [53] WPIX

AB WO 2001046355 A1 UPAB: 20060117

NOVELTY - Use of amines and amides for the stabilization of vegetable oils, marine oils, and single cell oils, oil concentrates and pigments, useful for producing **animal feed** and health products is disclosed.

DETAILED DESCRIPTION - (A) A novel method for stabilizing vegetable oils, marine oils, and single cell oils and oil concentrates, is characterized by treating the oil or oil concentrate by one or more amines or amides of formula (I):  $R_1-N(R_3)-R_2$  (I);

$R_1, R_2, R_3 = H, 1-10C$  alkyl,  $2-10C$  alkenyl, or  $RC(O)-$  or  $RN(H)-C(O)-C(O)-$ ;

$R = H, 1-10C$  alkyl,  $2-10C$  alkenyl, or  $R'N(H)-C(O)-$ ; and

$R' = 1-10C$  alkyl,  $2-10C$  alkenyl, or H if at least 2 of  $R_1, R_2$  and  $R_3$  are different from H.

INDEPENDENT CLAIMS are also included for:

(1) a method for stabilizing pigments like astaxanthin and canthaxanthin, characterized by exposing the pigments to one or more amines or amides as in (A);

(2) **feed** for salmonids comprising 25-70 weight % of proteins, 5-60 weight % of lipids, 0-40 weight % of carbohydrates, and pigments in combination with 0-15 weight % of one or more additional components, such as fillers, adhesives, preservatives, vitamins and minerals, characterized in that the **feed** also comprises one or more amines or amides as in (A);

(3) a method for optimizing the effect of a pigment in **feed** for salmonids, made from a mixture of components comprising proteins, lipids, carbohydrates and pigments in combination with one or more additional components, such as fillers, adhesives, preservatives, vitamins and minerals, characterized by adding amines or amides as in (A) to the **feed**;

(4) a health care product comprising concentrates of polyunsaturated fatty acids characterized in that the concentrates are treated according to a method as in (A);

(5) a fatty acid composition useful as a therapeutic agent comprising concentrates of omega-3 polyunsaturated fatty acids or salts, characterized in that the concentrates are treated according to a method as in (A); and

(6) use of a composition containing concentrates of omega-3 polyunsaturated fatty acids or salts treated according to a method as in (A), for the manufacture of a pharmaceutical **preparation** for the prophylaxis or treatment of multiple risk factors for cardiovascular diseases.

ACTIVITY - Cardiant; Antilipemic; Thrombolytic; Anticoagulant; Hypotensive; Antiarteriosclerotic; Cerebroprotective; Antidiabetic; Antiinflammatory; Immunosuppressive; Cytostatic; Nephrotropic; Gynecological.

MECHANISM OF ACTION - None given.

USE - The methods can be used for stabilizing vegetable oils, marine oils, single cell oils and oil concentrates (claimed). They can also be used for stabilizing pigments (claimed). The compositions can be used for producing salmonid **feeds** and for optimizing the effect of pigments in salmonid **feed** (claimed). They can also be used for producing health care products and fatty

acid compositions useful as therapeutic agents (claimed). The compositions containing concentrates of omega-3 polyunsaturated fatty acids can be used for the prophylaxis or treatment of multiple risk factors for cardiovascular diseases (claimed). They can be used in the treatment and prophylaxis of hyperlipidemia and correlated pathologies, thromboses, platelet agglutination, cardiac infarction, hypertension, anticoagulants, atherosclerosis, cerebral infarction, lesion and occlusions caused by vasomotor spasms, diabetes and its complications, acute and chronic inflammations, auto-immune syndromes, preventing the side effects at gastroenteric level of non-steroid anti-inflammatory agents, tumor prevention, IgA-nephropathy and pregnancy induced hypertension.

ADVANTAGE - The use of the amines or amides can reduce the oxidation of the oils and the pigments. Besides reducing the oxidation and thus improving the quality of the fat and pigments during the production **process**, the use of the amines or amides will provide prolonged storing time for the **feed**.

L87 ANSWER 47 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2001-290782 [30] WPIX  
 DOC. NO. CPI: C2001-089174 [30]  
 TITLE: Method for producing protein hydrolyzate and **astaxanthin** from natural protein-containing raw material, useful for human consumption, **animal feed** and cosmetics, comprises incubation with proteolytic composition derived from fish  
 DERWENT CLASS: B05; D13; D16; D21  
 INVENTOR: BENEDIKTSSON B; BJARNASON J B  
 PATENT ASSIGNEE: (NORD-N) NORDUR EHF  
 COUNTRY COUNT: 92

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2001028353	A1	20010426	(200130) *	EN	33[3]	
AU 2001015479	A	20010430	(200148)	EN		
NO 2002001877	A	20020619	(200253)	NO		
EP 1227736	A1	20020807	(200259)	EN		
DK 2002000585	A	20020618	(200275)	DA		
JP 2003511093	W	20030325	(200330)	JA	48	
EP 1227736	B1	20040107	(200405)	EN		
DE 60007655	E	20040212	(200419)	DE		
ES 2211646	T3	20040716	(200447)	ES		
US 7070953	B1	20060704	(200644)	EN		

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2001028353	A1	WO 2000-IS12	20001020
DE 60007655	E	DE 2000-607655	20001020
EP 1227736	A1	EP 2000-977850	20001020
EP 1227736	B1	EP 2000-977850	20001020
DE 60007655	E	EP 2000-977850	20001020
ES 2211646	T3	EP 2000-977850	20001020
NO 2002001877	A	WO 2000-IS12	20001020
EP 1227736	A1	WO 2000-IS12	20001020
DK 2002000585	A	WO 2000-IS12	20001020
JP 2003511093	W	WO 2000-IS12	20001020
EP 1227736	B1	WO 2000-IS12	20001020



DE 60007655 E	WO 2000-IS12 20001020
AU 2001015479 A	AU 2001-15479 20001020
JP 2003511093 W	JP 2001-530957 20001020
DK 2002000585 A	DK 2002-585 20020419
NO 2002001877 A	NO 2002-1877 20020419
US 7070953 B1	WO 2000-IS12 20001020
US 7070953 B1	US 2002-110977 20020618

## FILING DETAILS:

PATENT NO	KIND		PATENT NO	
DE 60007655	E	Based on	EP 1227736	A
ES 2211646	T3	Based on	EP 1227736	A
AU 2001015479	A	Based on	WO 2001028353	A
EP 1227736	A1	Based on	WO 2001028353	A
JP 2003511093	W	Based on	WO 2001028353	A
EP 1227736	B1	Based on	WO 2001028353	A
DE 60007655	E	Based on	WO 2001028353	A
US 7070953	B1	Based on	WO 2001028353	A

PRIORITY APPLN. INFO: **IS 1999-5225 19991020**

AN 2001-290782 [30] WPIX

AB WO 2001028353 A1 UPAB: 20050705

NOVELTY - A method for producing a protein hydrolyzate from a natural protein-containing raw material comprises:

(a) **preparing** an aqueous slurry comprising 1-100 % wet weight of protein-containing material;

(b) incubating the slurry with a proteolytic composition derived from fish;

(c) agitating the slurry for 0.25-48 hours at 2-60 degrees C;

(d) optionally inactivating the proteolytic mixture; and

(e) optionally separating the solution fraction from solid material.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(1) a **process** of producing a flavor **preparation**, comprising:

(i) **preparing** an aqueous slurry comprising 1 - 100 % wet weight protein-containing material;

(ii) incubating the slurry with a proteolytic composition derived from fish;

(iii) agitating the slurry for 0.25-48 hours at 2-40 degrees C;

(iv) optionally inactivating the proteolytic mixture; and

(v) separating the solution fraction from solid material, concentrating the solution to a dry weight content of 10-98 weight%; and

(2) a method for releasing at least part of the **astaxanthin** from an **astaxanthin** containing shellfish material, comprising:

(A) **preparing** as the starting material an aqueous slurry comprising the shellfish material;

(B) incubating the slurry with a proteolytic composition derived from fish, agitating the slurry at a temperature of 2-60 degrees C; and

(C) inactivating the proteolytic mixture to obtain a protein hydrolysate containing, relative to the starting material, a higher content of released **astaxanthin**.

USE - Protein hydrolyzates are used for human consumption, **animal feed** and cosmetics.

ADVANTAGE - Protein hydrolyzates are hydrolyzed under mild conditions leading to high yields and have excellent organoleptic properties.

DOC. NO. CPI: C2002-060714 [26]  
 TITLE: Extraction of **astaxanthin** pigment useful as additive for cosmetic or food, involves suspending cultivated blue-green algae in water, and microwave-treating the culture suspension to destroy cell walls and microbodies  
 DERWENT CLASS: A88; D13; D16; D21; E24  
 INVENTOR: CHOI S G; CHOI S K; CHUNG M G; HAN J Y; JUNG M K; LEE S J  
 PATENT ASSIGNEE: (HAIT-N) HAI TAI CONFECTIONERY CO LTD; (HAIT-N) HAITAI CONFECTIONERY & FOODS CO LTD; (HAIT-N) HAITAI FOODS PROD CO LTD  
 COUNTRY COUNT: 92

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
KR 2000072136	A	20001205	(200131)*	KO	[4]	
WO 2002012183	A1	20020214	(200226)	B EN	30[4]	
AU 2001028881	A	20020218	(200244)	EN		
KR 411364	B	20031218	(200425)	KO		

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
KR 2000072136 A		<b>KR 2000-45233</b>	<b>20000804</b>
KR 411364 B		<b>KR 2000-45233</b>	<b>20000804</b>
AU 2001028881 A		<b>AU 2001-28881</b>	<b>20010115</b>
WO 2002012183 A1		<b>WO 2001-KR55</b>	<b>20010115</b>

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
KR 411364 B	Previous Publ	KR 2000072136 A
AU 2001028881 A	Based on	WO 2002012183 A

PRIORITY APPLN. INFO: **KR 2000-45233 20000804**

AN 2001-298091 [31] WPIX  
 AB WO 2002012183 A1 UPAB: 20050705

NOVELTY - An **astaxanthin** pigment is extracted from blue-green algae by suspending cultivated blue-green algae in water, treating culture suspension with microwave to destroy the cell walls and microbodies, and drying the obtained material containing **astaxanthin** pigment. After the microwave-treatment, **astaxanthin** pigment may be extracted using ethanol, methanol and/or acetone as solvent.

USE - Extraction of **astaxanthin** pigment from blue-green algae e.g., *Acetabularia mediterranea*, *Chlamydomonas nivalis*, *Euglena rubida*, *Haematococcus pluvialis*, *Haematococcus lacustris* and/or *Haematococcus droeabicensis*. The **astaxanthin** pigment is useful in cosmetics, **animal feed** or food additives. (All claimed).

ADVANTAGE - The microwave treatment destroys cell walls for efficient extraction of pigment, thus obtaining an effective and efficient method. It yields 5-95 weight% **astaxanthin** pigment having 50-95 weight% purity.

DESCRIPTION OF DRAWINGS - The drawing is a schematic view of the continuous microwave treatment system using a Teflon tube.

ABEQ WO 2002012183 A1 UPAB 20050705

NOVELTY - An **astaxanthin** pigment is extracted from blue-green algae by suspending cultivated blue-green algae in water, treating culture suspension with microwave to destroy the cell walls and microbodies, and drying the obtained material containing **astaxanthin** pigment. After the microwave-treatment, **astaxanthin** pigment may be extracted using ethanol, methanol and/or acetone as solvent.

USE - Extraction of **astaxanthin** pigment from blue-green algae e.g., *Acetabularia mediterranea*, *Chlamydomonas nivalis*, *Euglena rubida*, *Haematococcus pluvialis*, *Haematococcus lacustris* and/or *Haematococcus droebachiensis*. The **astaxanthin** pigment is useful in cosmetics, **animal feed** or food additives. (All claimed).

ADVANTAGE - The microwave treatment destroys cell walls for efficient extraction of pigment, thus obtaining an effective and efficient method. It yields 5-95 wt.% **astaxanthin** pigment having 50-95 wt.% purity.

DESCRIPTION OF DRAWINGS - The drawing is a schematic view of the continuous microwave treatment system using a Teflon tube.

L87 ANSWER 49 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2001-223636 [23] WPIX  
 DOC. NO. CPI: C2002-014070 [07]  
 TITLE: Extracting **astaxanthin** pigment, for use in cosmetics, **animal feeds** and food additives, from the yeast cells of *Phaffia rhodozyma*, comprises using microwave  
 DERWENT CLASS: A96; B05; D13; D16; D22  
 INVENTOR: CHOI S G; CHOI S K; CHUNG M G; HAN J Y; JUNG M K; LEE S J; ROH J S  
 PATENT ASSIGNEE: (CHOI-I) CHOI S K; (HAIT-N) HAI TAI CONFECTIONERY CO LTD; (HAIT-N) HAI TAI FOOD PROD CO LTD; (HAIT-N) HAITA FOOD PROD CO LTD; (HAIT-N) HAITAI CONFECTIONERY & FOODS CO LTD; (HANJ-I) HAN J Y; (JUNG-I) JUNG M K; (LEES-I) LEE S J; (ROHJ-I) ROH J S  
 COUNTRY COUNT: 93

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
KR 2000053886	A	20000905	(200123)*	KO	[4]	
WO 2001083437	A1	20011108	(200207)B	EN	27[4]	
AU 2001056807	A	20011112	(200222)	EN		
EP 1278725	A1	20030129	(200310)	EN		
US 20030087335	A1	20030508	(200337)	EN		
KR 388110	B	20030618	(200369)	KO		
JP 2003531888	W	20031028	(200373)	JA	24	

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
KR 2000053886	A	KR 2000-23851	20000504
KR 388110	B	KR 2000-23851	20000504
AU 2001056807	A	AU 2001-56807	20010430
EP 1278725	A1	EP 2001-930264	20010502
JP 2003531888	W	JP 2001-580866	20010502
EP 1278725	A1	WO 2001-KR719	20010502
US 20030087335	A1	WO 2001-KR719	20010502

JP 2003531888 W  
 WO 2001083437 A1  
 US 20030087335 A1

WO 2001-KR719 20010502  
 WO 2001-KR719 20010502  
 US 2002-19272 20020103

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
KR 388110 B	Previous Publ	KR 2000053886 A
AU 2001056807 A	Based on	WO 2001083437 A
EP 1278725 A1	Based on	WO 2001083437 A
JP 2003531888 W	Based on	WO 2001083437 A

PRIORITY APPLN. INFO: **KR 2000-23851 20000504**

AN 2001-223636 [23] WPIX  
 AB WO 2001083437 A1 UPAB: 20050705

NOVELTY - Extracting **astaxanthin** pigment from yeast cells of *Phaffia rhodozyma* comprises cultivating yeast cells, suspending the cultivated cells with water, treating the culture suspension with microwave to destroy the cell walls and microbodies and drying the obtained material containing the pigment or extracting the pigment using a solvent selected from ethanol, methanol, acetone and mixtures of these.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- (1) **astaxanthin** pigment extracted from the yeast cells of *P. rhodozyma* by the new method; and
- (2) using **astaxanthin** pigment as cosmetics, **animal feeds** or food additives.

USE - The method is used to extract **astaxanthin** pigment, which is used in cosmetics, **animal feeds** and food additives.

Member(0002)

ABEQ WO 2001083437 A1 UPAB 20050705

NOVELTY - Extracting **astaxanthin** pigment from yeast cells of *Phaffia rhodozyma* comprises cultivating yeast cells, suspending the cultivated cells with water, treating the culture suspension with microwave to destroy the cell walls and microbodies and drying the obtained material containing the pigment or extracting the pigment using a solvent selected from ethanol, methanol, acetone and mixtures of these.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- (1) **astaxanthin** pigment extracted from the yeast cells of *P. rhodozyma* by the new method; and
- (2) using **astaxanthin** pigment as cosmetics, **animal feeds** or food additives.

USE - The method is used to extract **astaxanthin** pigment, which is used in cosmetics, **animal feeds** and food additives.

L87 ANSWER 50 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2000-128182 [12] WPIX  
 DOC. NO. CPI: C2000-039326 [12]  
 TITLE: Use of organosulfur compounds, e.g. liponic acid, to shift the UV/visible absorption spectrum of carotinoids; useful for coloring foods, **animal feeds**, cosmetics and pharmaceuticals  
 DERWENT CLASS: B07; D13; D21; E15; E24  
 INVENTOR: AUWETER H; BOHN H; HORN D; KRAEMER K; PAUST J; WEISS H  
 PATENT ASSIGNEE: (BADI-C) BASF AG

COUNTRY COUNT: 27

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
EP 972454	A2	20000119	(200012)*	DE	6[0]	
DE 19831865	A1	20000120	(200012)	DE		
JP 2000103983	A	20000411	(200029)	JA	6	
CN 1249304	A	20000405	(200034)	ZH		
US 6271396	B1	20010807	(200147)	EN		
EP 972454	B1	20031015	(200368)	DE		
DE 59907346	G	20031120	(200380)	DE		
ES 2209290	T3	20040616	(200442)	ES		
CN 1117075	C	20030806	(200549)	ZH		

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 972454	A2	<b>EP 1999-113420</b>	<b>19990712</b>
DE 19831865	A1	<b>DE 1998-19831865</b>	<b>19980716</b>
DE 59907346	G	<b>DE 1999-59907346</b>	<b>19990712</b>
DE 59907346	G	<b>EP 1999-113420</b>	<b>19990712</b>
ES 2209290	T3	<b>EP 1999-113420</b>	<b>19990712</b>
US 6271396	B1	<b>US 1999-352140</b>	<b>19990713</b>
JP 2000103983	A	<b>JP 1999-201663</b>	<b>19990715</b>
CN 1249304	A	<b>CN 1999-119599</b>	<b>19990716</b>
CN 1117075	C	<b>CN 1999-119599</b>	<b>19990716</b>

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
DE 59907346	Based on	EP 972454 A
ES 2209290	Based on	EP 972454 A

PRIORITY APPLN. INFO: **DE 1998-19831865 19980716**

AN 2000-128182 [12] WPIX

AB EP 972454 A2 UPAB: 20060115

NOVELTY - The use of organosulfur compounds is claimed for bathochromic shifting of the UV/visible absorption spectrum of carotinoids.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:

(A) complexes comprising one or more organosulfur compounds and one or more carotinoids, and

(B) **preparation** of carotinoid formulations, which comprises dispersion of an organosulfur/carotinoid mixture in water or a protective colloid solution, followed by drying of the dispersion.

USE - As dyestuffs for foods, **animal feeds**, cosmetics and pharmaceuticals (claimed). Particular food applications include drinks, yoghurt, ice creams, baking mixes and powdered dessert mixes.

ADVANTAGE - The dried complexes are easily dispersed in cold water. Unlike inorganic sulfur compounds (e.g. carbon disulfide), which also alter the absorption spectrum of carotinoids, the organosulfur compounds are non-toxic.

Member(0001)

ABEQ DE 19831865 A1 UPAB 20060115

NOVELTY - The use of organosulfur compounds is claimed for bathochromic

shifting of the UV/visible absorption spectrum of carotinoids.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:

(A) complexes comprising one or more organosulfur compounds and one or more carotinoids, and

(B) **preparation** of carotinoid formulations, which comprises dispersion of an organosulfur/carotinoid mixture in water or a protective colloid solution, followed by drying of the dispersion.

USE - As dyestuffs for foods, **animal feeds**, cosmetics and pharmaceuticals (claimed). Particular food applications include drinks, yoghurt, ice creams, baking mixes and powdered dessert mixes.

ADVANTAGE - The dried complexes are easily dispersed in cold water. Unlike inorganic sulfur compounds (e.g. carbon disulfide), which also alter the absorption spectrum of carotinoids, the organosulfur compounds are non-toxic.

Member(0003)

ABEQ JP 2000103983 A UPAB 20060115

NOVELTY - The use of organosulfur compounds is claimed for bathochromic shifting of the UV/visible absorption spectrum of carotinoids.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:

(A) complexes comprising one or more organosulfur compounds and one or more carotinoids, and

(B) **preparation** of carotinoid formulations, which comprises dispersion of an organosulfur/carotinoid mixture in water or a protective colloid solution, followed by drying of the dispersion.

USE - As dyestuffs for foods, **animal feeds**, cosmetics and pharmaceuticals (claimed). Particular food applications include drinks, yoghurt, ice creams, baking mixes and powdered dessert mixes.

ADVANTAGE - The dried complexes are easily dispersed in cold water. Unlike inorganic sulfur compounds (e.g. carbon disulfide), which also alter the absorption spectrum of carotinoids, the organosulfur compounds are non-toxic.

Member(0004)

ABEQ CN 1249304 A UPAB 20060115

NOVELTY - The use of organosulfur compounds is claimed for bathochromic shifting of the UV/visible absorption spectrum of carotinoids.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:

(A) complexes comprising one or more organosulfur compounds and one or more carotinoids, and

(B) **preparation** of carotinoid formulations, which comprises dispersion of an organosulfur/carotinoid mixture in water or a protective colloid solution, followed by drying of the dispersion.

USE - As dyestuffs for foods, **animal feeds**, cosmetics and pharmaceuticals (claimed). Particular food applications include drinks, yoghurt, ice creams, baking mixes and powdered dessert mixes.

ADVANTAGE - The dried complexes are easily dispersed in cold water. Unlike inorganic sulfur compounds (e.g. carbon disulfide), which also alter the absorption spectrum of carotinoids, the organosulfur compounds are non-toxic.

Member(0005)

ABEQ US 6271396 B1 UPAB 20060115

NOVELTY - The use of organosulfur compounds is claimed for bathochromic shifting of the UV/visible absorption spectrum of carotinoids.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:

(A) complexes comprising one or more organosulfur compounds and one

or more carotinoids, and

(B) **preparation** of carotinoid formulations, which comprises dispersion of an organosulfur/carotinoid mixture in water or a protective colloid solution, followed by drying of the dispersion.

USE - As dyestuffs for foods, **animal feeds**, cosmetics and pharmaceuticals (claimed). Particular food applications include drinks, yoghurt, ice creams, baking mixes and powdered dessert mixes.

ADVANTAGE - The dried complexes are easily dispersed in cold water. Unlike inorganic sulfur compounds (e.g. carbon disulfide), which also alter the absorption spectrum of carotinoids, the organosulfur compounds are non-toxic.

L87 ANSWER 51 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 2001-017297 [03] WPIX  
 DOC. NO. CPI: C2001-004982 [03]  
 TITLE: **Preparation** of stable, aqueous dispersions of xanthophylls with a solvent and a protective colloid, useful as additives for food, pharmaceuticals and **animal feeds**  
 DERWENT CLASS: B05; D13  
 INVENTOR: AUWETER H; BOHN H; LUDDECKE E; LUEDDECKE E; LUEDECKE E  
 PATENT ASSIGNEE: (BADI-C) BASF AG  
 COUNTRY COUNT: 92

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
DE 19919751	A1	20001109	(200103)*	DE	5[0]	
WO 2000066665	A1	20001109	(200103)	DE		
AU 2000045514	A	20001117	(200111)	EN		
EP 1173521	A1	20020123	(200214)	DE		
NO 2001005238	A	20011228	(200221)	NO		
CN 1348483	A	20020508	(200253)	ZH		
EP 1173521	B1	20021016	(200276)	DE		
DE 50000657	G	20021121	(200277)	DE		
JP 2002543263	W	20021217	(200312)	JA	15	
MX 2001010881	A1	20020601	(200365)	ES		
AU 771134	B2	20040311	(200454)	EN		
US 6863914	B1	20050308	(200518)	EN		
MX 222298	B	20040825	(200538)	ES		
CN 1125145	C	20031022	(200556)	ZH		
JP 3694240	B2	20050914	(200560)	JA	8	
NO 320106	B1	20051024	(200571)	NO		
TW 227261	B1	20050201	(200623)	ZH		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 19919751	A1	DE 1999-19919751	19990429
AU 2000045514	A	AU 2000-45514	20000417
AU 771134	B2	AU 2000-45514	20000417
CN 1348483	A	CN 2000-806761	20000417
CN 1125145	C	CN 2000-806761	20000417
DE 50000657	G	DE 2000-500657	20000417
EP 1173521	A1	EP 2000-926970	20000417
EP 1173521	B1	EP 2000-926970	20000417
DE 50000657	G	EP 2000-926970	20000417

JP 2002543263 W	JP 2000-615692 20000417
JP 3694240 B2	JP 2000-615692 20000417
WO 2000066665 A1	WO 2000-EP3467 20000417
EP 1173521 A1	WO 2000-EP3467 20000417
NO 2001005238 A	WO 2000-EP3467 20000417
EP 1173521 B1	WO 2000-EP3467 20000417
DE 50000657 G	WO 2000-EP3467 20000417
JP 2002543263 W	WO 2000-EP3467 20000417
MX 2001010881 A1	WO 2000-EP3467 20000417
US 6863914 B1	WO 2000-EP3467 20000417
MX 222298 B	WO 2000-EP3467 20000417
JP 3694240 B2	WO 2000-EP3467 20000417
NO 320106 B1	WO 2000-EP3467 20000417
US 6863914 B1	US 2001-959351 20011024
MX 2001010881 A1	MX 2001-10881 20011026
MX 222298 B	MX 2001-10881 20011026
NO 2001005238 A	NO 2001-5238 20011026
NO 320106 B1	NO 2001-5238 20011026
TW 227261 B1	TW 2000-107146 20000417

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 771134 B2	Previous Publ	AU 2000045514 A
DE 50000657 G	Based on	EP 1173521 A
JP 3694240 B2	Previous Publ	JP 2002543263 W
NO 320106 B1	Previous Publ	NO 2001005238 A
AU 2000045514 A	Based on	WO 2000066665 A
EP 1173521 A1	Based on	WO 2000066665 A
EP 1173521 B1	Based on	WO 2000066665 A
DE 50000657 G	Based on	WO 2000066665 A
JP 2002543263 W	Based on	WO 2000066665 A
MX 2001010881 A1	Based on	WO 2000066665 A
AU 771134 B2	Based on	WO 2000066665 A
US 6863914 B1	Based on	WO 2000066665 A
MX 222298 B	Based on	WO 2000066665 A
JP 3694240 B2	Based on	WO 2000066665 A

## PRIORITY APPLN. INFO: DE 1999-19919751 19990429

AN 2001-017297 [03] WPIX

AB DE 19919751 A1 UPAB: 20060116

NOVELTY - **Preparation** of stable, aqueous dispersions of xanthophylls comprises dissolving the xanthophyll in a water-miscible organic solvent (which is optionally mixed with water) at more than 30 degrees C, followed by mixing with a protective colloid.

DETAILED DESCRIPTION - **Preparation** of stable, aqueous dispersions or water-dispersible dry powders based on the xanthophylls **astaxanthine**, lutein and zeaxanthine comprises:

(1) dissolving one or more of the above xanthophylls in a water-miscible organic solvent or a mixture of water and such a solvent at more than 30 degrees C;

(2) mixing this solution with an aqueous dispersion of a protective colloid, so that the solvent component is transferred to the aqueous phase and the hydrophobic phase of the xanthophyll becomes a nanodisperse phase; and optionally

(3) converting this dispersion into a water-dispersible dry powder by separating the solvent and drying, optionally in the presence of a coating agent.



USE - The dispersions and powders are useful as coloring agents for foods, pharmaceuticals and **animal feeds** (claimed), and can e.g. be used to impart a yellow color to fish or egg yolk. **Astaxanthine** also has provitamin A activity.

ADVANTAGE - Compositions produced in this way have high bioavailability and good color. The use of casein avoids the need for emulsifiers. The technique produces dispersions with almost the same viscosity profile as Newtonian fluids (allowing easier spray drying), and also avoids the formation of xanthophyll H-aggregates, which have lower bioavailability.

Member(0002)

ABEQ WO 2000066665 A1 UPAB 20060116

NOVELTY - **Preparation** of stable, aqueous dispersions of xanthophylls comprises dissolving the xanthophyll in a water-miscible organic solvent (which is optionally mixed with water) at more than 30 degrees C, followed by mixing with a protective colloid.

DETAILED DESCRIPTION - **Preparation** of stable, aqueous dispersions or water-dispersible dry powders based on the xanthophylls **astaxanthine**, lutein and zeaxanthine comprises:

(1) dissolving one or more of the above xanthophylls in a water-miscible organic solvent or a mixture of water and such a solvent at more than 30 degrees C;

(2) mixing this solution with an aqueous dispersion of a protective colloid, so that the solvent component is transferred to the aqueous phase and the hydrophobic phase of the xanthophyll becomes a nanodisperse phase; and optionally

(3) converting this dispersion into a water-dispersible dry powder by separating the solvent and drying, optionally in the presence of a coating agent.

USE - The dispersions and powders are useful as coloring agents for foods, pharmaceuticals and **animal feeds** (claimed), and can e.g. be used to impart a yellow color to fish or egg yolk. **Astaxanthine** also has provitamin A activity.

ADVANTAGE - Compositions produced in this way have high bioavailability and good color. The use of casein avoids the need for emulsifiers. The technique produces dispersions with almost the same viscosity profile as Newtonian fluids (allowing easier spray drying), and also avoids the formation of xanthophyll H-aggregates, which have lower bioavailability.

L87 ANSWER 52 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 1999-180495 [15] WPIX  
 CROSS REFERENCE: 1998-159551  
 DOC. NO. CPI: C1999-052594 [15]  
 DOC. NO. NON-CPI: N1999-132564 [15]  
 TITLE: Altering xanthophyll content of seeds by transformation  
 - used to produce seed oils of increased carotenoid  
 content, e.g. Brassica and cotton  
 DERWENT CLASS: C06; D16; P13  
 INVENTOR: SHEWMAKER C K  
 PATENT ASSIGNEE: (CALJ-C) CALGENE LLC  
 COUNTRY COUNT: 23

PATENT INFO ABBR.:

PATENT NO	KIND DATE	WEEK	LA	PG	MAIN IPC
WO 9907867	A1 19990218	(199915)*	EN	92	[17]
AU 9889002	A 19990301	(199928)	EN		

EP 1002117	A1	20000524 (200030)	EN
CN 1275166	A	20001129 (200121)	ZH
JP 2001512688	W	20010828 (200156)	JA 100
AU 747542	B	20020516 (200244)	EN

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 9907867	A1	<b>WO 1998-US16466</b>	<b>19980806</b>
AU 747542	B Div Ex	AU 1997-40584	
AU 9889002	A	<b>AU 1998-89002</b>	<b>19980806</b>
AU 747542	B	<b>AU 1998-89002</b>	<b>19980806</b>
CN 1275166	A	<b>CN 1998-809902</b>	<b>19980806</b>
EP 1002117	A1	<b>EP 1998-940812</b>	<b>19980806</b>
EP 1002117	A1	<b>WO 1998-US16466</b>	<b>19980806</b>
JP 2001512688	W	<b>WO 1998-US16466</b>	<b>19980806</b>
JP 2001512688	W	<b>JP 2000-506350</b>	<b>19980806</b>

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 747542	B	Previous Publ
AU 9889002	A	Based on
EP 1002117	A1	Based on
JP 2001512688	W	Based on
AU 747542	B	Based on

PRIORITY APPLN. INFO: **US 1997-908758 19970808**

AN 1999-180495 [15] WPIX

CR 1998-159551

AB WO 1999007867 A1 UPAB: 20060115

NOVELTY - The xanthophyll (I) content of seeds is altered by transforming cells of a host plant with at least one construct containing: (i) transcription initiation region of a gene preferentially expressed in seeds; (ii) the sequence for a plastid transit peptide; (iii) DNA (II) from a carotenoid synthesis gene coding region, and (iv) a transcription terminator.

DETAILED DESCRIPTION - The transformed cells are regenerated to plants and these, or their progeny, grown to produce seeds. INDEPENDENT CLAIMS are also included for the following: (1) increasing content of (I) by transforming with two constructs, containing different (II), derived from the genes for phytoene synthase (PS),  $\beta$ -carotene hydroxylase (bCH) or  $\beta$ -carotene ketolase (bCK); (2) host plants, and their seeds, produced this way; and (3) transformed seeds produced this way containing at least one of zeaxanthin; (hydroxy)canthaxanthin; echinenone;  $\alpha$  or  $\beta$ -cryptoxanthin; adonixanthin and **astaxanthin**.

USE - The method is used to increase (I) content of oilseeds, specifically Brassica and cotton. The oils produced from the transformed plants are useful in normal food applications. No uses specific for (I) are given but carotenoids in general are known as (vitamin) supplements; food ingredients; **animal feed** additives; colorants; cancer-inhibiting agents; for treatment of skin disorders and to prevent macular degeneration. - ACTIVITY - None given. - MECHANISM OF ACTION - Inhibition or augmentation of enzymatic activity.

ADVANTAGE - The modified seeds may contain oils with altered fatty acid compositions, particularly increased content of oleic acid but reduced contents of linoleic and linolenic acids. The oils are more stable than known carotenoid-rich oils (from marigold petals or red palm oil), typically with only 10% loss after 1-2 weeks, and stability is improved by storing the seeds

under nitrogen. Transforming a plant with a gene involved at the early stage of carotenoid biosynthesis increases carotenoid production in general, and other genes are introduced to direct synthesis of specific carotenoids.

Member(0003)

ABEQ EP 1002117 A1 UPAB 20060115

NOVELTY - The xanthophyll (I) content of seeds is altered by transforming cells of a host plant with at least one construct containing: (i) transcription initiation region of a gene preferentially expressed in seeds; (ii) the sequence for a plastid transit peptide; (iii) DNA (II) from a carotenoid synthesis gene coding region, and (iv) a transcription terminator. DETAILED DESCRIPTION - The transformed cells are regenerated to plants and these, or their progeny, grown to produce seeds. INDEPENDENT CLAIMS are also included for the following: (1) increasing content of (I) by transforming with two constructs, containing different (II), derived from the genes for phytoene synthase (PS),  $\beta$ -carotene hydroxylase (bCH) or  $\beta$ -carotene ketolase (bCK); (2) host plants, and their seeds, produced this way; and (3) transformed seeds produced this way containing at least one of zeaxanthin; (hydroxy)canthaxanthin; echinenone;  $\alpha$  or  $\beta$ -cryptoxanthin; adonixanthin and **astaxanthin**.

USE - The method is used to increase (I) content of oilseeds, specifically Brassica and cotton. The oils produced from the transformed plants are useful in normal food applications. No uses specific for (I) are given but carotenoids in general are known as (vitamin) supplements; food ingredients; **animal feed** additives; colorants; cancer-inhibiting agents; for treatment of skin disorders and to prevent macular degeneration. - ACTIVITY - None given. - MECHANISM OF ACTION - Inhibition or augmentation of enzymatic activity.

ADVANTAGE - The modified seeds may contain oils with altered fatty acid compositions, particularly increased content of oleic acid but reduced contents of linoleic and linolenic acids. The oils are more stable than known carotenoid-rich oils (from marigold petals or red palm oil), typically with only 10% loss after 1-2 weeks, and stability is improved by storing the seeds under nitrogen. Transforming a plant with a gene involved at the early stage of carotenoid biosynthesis increases carotenoid production in general, and other genes are introduced to direct synthesis of specific carotenoids.

Member(0004)

ABEQ CN 1275166 A UPAB 20060115

NOVELTY - The xanthophyll (I) content of seeds is altered by transforming cells of a host plant with at least one construct containing: (i) transcription initiation region of a gene preferentially expressed in seeds; (ii) the sequence for a plastid transit peptide; (iii) DNA (II) from a carotenoid synthesis gene coding region, and (iv) a transcription terminator. DETAILED DESCRIPTION - The transformed cells are regenerated to plants and these, or their progeny, grown to produce seeds. INDEPENDENT CLAIMS are also included for the following: (1) increasing content of (I) by transforming with two constructs, containing different (II), derived from the genes for phytoene synthase (PS),  $\beta$ -carotene hydroxylase (bCH) or  $\beta$ -carotene ketolase (bCK); (2) host plants, and their seeds, produced this way; and (3) transformed seeds produced this way containing at least one of zeaxanthin; (hydroxy)canthaxanthin; echinenone;  $\alpha$  or  $\beta$ -cryptoxanthin; adonixanthin and **astaxanthin**.

USE - The method is used to increase (I) content of oilseeds, specifically Brassica and cotton. The oils produced from the transformed plants are useful in normal food applications. No uses specific for (I) are given but carotenoids in general are known as (vitamin) supplements;

food ingredients; **animal feed** additives; colorants; cancer-inhibiting agents; for treatment of skin disorders and to prevent macular degeneration. - ACTIVITY - None given. - MECHANISM OF ACTION - Inhibition or augmentation of enzymatic activity.

ADVANTAGE - The modified seeds may contain oils with altered fatty acid compositions, particularly increased content of oleic acid but reduced contents of linoleic and linolenic acids. The oils are more stable than known carotenoid-rich oils (from marigold petals or red palm oil), typically with only 10% loss after 1-2 weeks, and stability is improved by storing the seeds under nitrogen. Transforming a plant with a gene involved at the early stage of carotenoid biosynthesis increases carotenoid production in general, and other genes are introduced to direct synthesis of specific carotenoids.

L87 ANSWER 53 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 1999-153810 [13] WPIX  
 DOC. NO. CPI: C1999-045537 [13]  
 TITLE: New Paracoccus marcusii bacterium that produces and secretes carotenoid pigments - useful, as additives for **animal feeds** or human foods, in cosmetics and as pharmaceuticals  
 DERWENT CLASS: D13; D16; D21; E24  
 INVENTOR: HARKER M; HIRSCHBERG J  
 PATENT ASSIGNEE: (FRIE-I) FRIEDMAN M M; (YISS-C) YISSUM RES & DEV CO;  
 (YISS-C) YISSUM RES DEV CO HEBREW UNIV JERUSALEM  
 COUNTRY COUNT: 81

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 9906586	A1	19990211	(199913)*	EN	55[7]	
AU 9885751	A	19990222	(199927)	EN		
US 5935808	A	19990810	(199938)	EN		
EP 1005565	A1	20000607	(200032)	EN		
JP 2001512030	W	20010821	(200155)	JA	69	
AU 749302	B	20020620	(200252)	EN		

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 9906586	A1	WO 1998-US14905	19980716
US 5935808	A	US 1997-902518	19970729
AU 9885751	A	AU 1998-85751	19980716
AU 749302	B	AU 1998-85751	19980716
EP 1005565	A1	EP 1998-936907	19980716
EP 1005565	A1	WO 1998-US14905	19980716
JP 2001512030	W	WO 1998-US14905	19980716
JP 2001512030	W	JP 2000-505326	19980716

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 749302	B	Previous Publ
AU 9885751	A	Based on
EP 1005565	A1	Based on
JP 2001512030	W	Based on
AU 749302	B	Based on
		AU 9885751 A
		WO 9906586 A
		WO 9906586 A
		WO 9906586 A
		WO 9906586 A

PRIORITY APPLN. INFO: **US 1997-902518 19970729**

AN 1999-153810 [13] WPIX

AB WO 1999006586 A1 UPAB: 20060115

Production of at least one carotenoid pigment (I) comprises: (a) culturing: (i) a species of *Paracoccus* (as identified by 16S rRNA gene homology); or (ii) any bacterium that secretes (I)-containing vesicles into a nutrient medium including sources of carbon, nitrogen, and inorganic substances; and (b) recovering an individual carotenoid pigment or a mixture of carotenoid pigments, particularly from the vesicles. Also claimed are: (1) *P. marcusii* strain MH1 (DSM 11574) ; (2) any bacterium that secretes at least one (I) during its life cycle; (3) any *Paracoccus* (identified as above) that produces at least one (I); (4) a **preparation** comprising (I)-containing vesicles secreted from bacteria; (5) a growth medium comprising (I)-containing vesicles; (6) a globular, lipophilic body containing at least one (I); and (7) separation of (I)-containing vesicles from a medium containing bacterial cells by using a size-separation technique, thus separating the (I)-containing vesicles from the cells.

USE - (I) are useful as additives for **animal feeds** or human foods (as antioxidants) and in cosmetics, also  $\beta$ -carotene is used as a pharmaceutical. Particularly **astaxanthin** (Ia) is used as a colour improver for farmed fish, especially salmonids.

ADVANTAGE - The new bacterium provides a ready source of several different (I) which are currently very expensive to synthesise or to extract from natural sources. In the case of (Ia), the bacterial product has the required (3S,3S') absolute configuration and exists in the natural all-trans form.

Member(0003)

ABEQ US 5935808 A UPAB 20060115

Production of at least one carotenoid pigment (I) comprises: (a) culturing: (i) a species of *Paracoccus* (as identified by 16S rRNA gene homology); or (ii) any bacterium that secretes (I)-containing vesicles into a nutrient medium including sources of carbon, nitrogen, and inorganic substances; and (b) recovering an individual carotenoid pigment or a mixture of carotenoid pigments, particularly from the vesicles. Also claimed are: (1) *P. marcusii* strain MH1 (DSM 11574) ; (2) any bacterium that secretes at least one (I) during its life cycle; (3) any *Paracoccus* (identified as above) that produces at least one (I); (4) a **preparation** comprising (I)-containing vesicles secreted from bacteria; (5) a growth medium comprising (I)-containing vesicles; (6) a globular, lipophilic body containing at least one (I); and (7) separation of (I)-containing vesicles from a medium containing bacterial cells by using a size-separation technique, thus separating the (I)-containing vesicles from the cells.

USE - (I) are useful as additives for **animal feeds** or human foods (as antioxidants) and in cosmetics, also  $\beta$ -carotene is used as a pharmaceutical. Particularly **astaxanthin** (Ia) is used as a colour improver for farmed fish, especially salmonids.

ADVANTAGE - The new bacterium provides a ready source of several different (I) which are currently very expensive to synthesise or to extract from natural sources. In the case of (Ia), the bacterial product has the required (3S,3S') absolute configuration and exists in the natural all-trans form.

Member(0004)

ABEQ EP 1005565 A1 UPAB 20060115

Production of at least one carotenoid pigment (I) comprises: (a) culturing: (i) a species of *Paracoccus* (as identified by 16S rRNA gene

homology); or (ii) any bacterium that secretes (I)-containing vesicles into a nutrient medium including sources of carbon, nitrogen, and inorganic substances; and (b) recovering an individual carotenoid pigment or a mixture of carotenoid pigments, particularly from the vesicles. Also claimed are: (1) *P. marcusii* strain MH1 (DSM 11574) ; (2) any bacterium that secretes at least one (I) during its life cycle; (3) any *Paracoccus* (identified as above) that produces at least one (I); (4) a **preparation** comprising (I)-containing vesicles secreted from bacteria; (5) a growth medium comprising (I)-containing vesicles; (6) a globular, lipophilic body containing at least one (I); and (7) separation of (I)-containing vesicles from a medium containing bacterial cells by using a size-separation technique, thus separating the (I)-containing vesicles from the cells.

USE - (I) are useful as additives for **animal feeds** or human foods (as antioxidants) and in cosmetics, also  $\beta$ -carotene is used as a pharmaceutical. Particularly **astaxanthin** (Ia) is used as a colour improver for farmed fish, especially salmonids.

ADVANTAGE - The new bacterium provides a ready source of several different (I) which are currently very expensive to synthesise or to extract from natural sources. In the case of (Ia), the bacterial product has the required (3S,3S') absolute configuration and exists in the natural all-trans form.

L87 ANSWER 54 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 1999-460561 [39] WPIX  
 DOC. NO. CPI: C1999-135345 [39]  
 TITLE: Continuous **preparation** of a finely divided natural colorant especially carotenoids, useful as food and **animal feed** additives  
 DERWENT CLASS: D13; E19; E24  
 INVENTOR: STEIN H; VIARDOT K; YANG B; VIARDOF K  
 PATENT ASSIGNEE: (STAM-C) DSM IP ASSETS BV; (HOFF-C) HOFFMANN LA ROCHE & CO AG F; (HOFF-C) ROCHE VITAMINS INC; (STEI-I) STEIN H; (VIAR-I) VIARDOT K; (YANG-I) YANG B  
 COUNTRY COUNT: 36

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
EP 937412	A1	19990825	(199939)	* EN	8	[1]
NO 9900852	A	19990824	(199945)	NO		
AU 9918362	A	19990909	(199949)	EN		
CA 2261456	A1	19990823	(200005)	EN		
CN 1231843	A	19991020	(200009)	ZH		
BR 9900776	A	20000328	(200029)	PT		
JP 2000186224	A	20000704	(200037)	JA	5	
KR 99072792	A	19990927	(200048)	KO	[1]	
MX 9901754	A1	20000201	(200123)	ES		
US 20010008644	A1	20010719	(200143)	EN		
AU 743535	B	20020131	(200222)	EN		
US 6406735	B2	20020618	(200244)	EN		
NO 315892	B1	20031110	(200375)	NO		
TW 565434	A	20031211	(200434)	ZH		
MX 224632	B	20041203	(200561)	ES		
EP 937412	B1	20060201	(200612)	EN		
CN 1173637	C	20041103	(200617)	ZH		
PH 1199900351	B1	20040211	(200618)	EN		
DE 69929641	E	20060413	(200629)	DE		
ES 2257828	T3	20060801	(200652)	ES		

DE 69929641 T2 20061214 (200701) DE

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 937412 A1		EP 1999-103239	19990219
CA 2261456 A1		CA 1999-2261456	19990211
DE 69929641 E		DE 1999-629641	19990219
DE 69929641 E		EP 1999-103239	19990219
ES 2257828 T3		EP 1999-103239	19990219
KR 99072792 A		KR 1999-5665	19990220
AU 9918362 A		AU 1999-18362	19990222
AU 743535 B		AU 1999-18362	19990222
BR 9900776 A		BR 1999-776	19990222
JP 2000186224 A		JP 1999-42594	19990222
MX 9901754 A1		MX 1999-1754	19990222
MX 224632 B		MX 1999-1754	19990222
TW 565434 A		TW 1999-102545	19990222
US 20010008644 A1		US 1999-255010	19990222
US 6406735 B2		US 1999-255010	19990222
CN 1231843 A		CN 1999-102900	19990223
CN 1173637 C		CN 1999-102900	19990223
NO 9900852 A		NO 1999-852	19990223
NO 315892 B1		NO 1999-852	19990223
PH 1199900351 B1		PH 1999-351	19990223
DE 69929641 T2		DE 1999-629641	19990219
DE 69929641 T2		EP 1999-103239	19990219

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 743535	B Previous Publ	AU 9918362 A
DE 69929641	E Based on	EP 937412 A
ES 2257828	T3 Based on	EP 937412 A
NO 315892	B1 Previous Publ	NO 9900852 A
DE 69929641	T2 Based on	EP 937412 A

PRIORITY APPLN. INFO: EP 1998-103113 19980223

AN 1999-460561 [39] WPIX

AB EP 937412 A1 UPAB: 20060115

NOVELTY - Continuous **preparation** of a pulverous carotenoid, retinoid or natural colorant comprises suspending the colorant in a water-immiscible organic solvent, rapidly heating to 100-250degreesC, rapidly mixing the obtained solution at 20-100degreesC with an aqueous solution of a swellable colloid, removing the organic solvent and converting the obtained dispersion to a pulverous **preparation**.

DETAILED DESCRIPTION - Continuous **preparation** of a pulverous carotenoid, retinoid or natural colorant comprises:

(1) suspending the colorant in a water-immiscible organic solvent optionally containing an antioxidant and/or oil;

(2) heating the suspension in a heat exchanger to 100-250degreesC, where the residence time in the heat exchanger is less than 5 sec.;

(3) rapidly mixing the obtained solution at 20-100degreesC with an aqueous solution of a swellable colloid optionally containing a stabilizer;

(4) removing the organic solvent; and

(5) converting the obtained dispersion to a pulverous **preparation**.

USE - The products are used for coloring foodstuffs and **animal feeds**.

ADVANTAGE - Powders which cover a very wide range of colors may be obtained. Reduced amounts of solvent are required.

Member(0005)

ABEQ CN 1231843 A UPAB 20060115

NOVELTY - Continuous **preparation** of a pulverous carotenoid, retinoid or natural colorant comprises suspending the colorant in a water-immiscible organic solvent, rapidly heating to 100-250degreesC, rapidly mixing the obtained solution at 20-100degreesC with an aqueous solution of a swellable colloid, removing the organic solvent and converting the obtained dispersion to a pulverous **preparation**.

DETAILED DESCRIPTION - Continuous **preparation** of a pulverous carotenoid, retinoid or natural colorant comprises:

(1) suspending the colorant in a water-immiscible organic solvent optionally containing an antioxidant and/or oil;

(2) heating the suspension in a heat exchanger to 100-250degreesC, where the residence time in the heat exchanger is less than 5 sec.;

(3) rapidly mixing the obtained solution at 20-100degreesC with an aqueous solution of a swellable colloid optionally containing a stabilizer;

(4) removing the organic solvent; and

(5) converting the obtained dispersion to a pulverous **preparation**.

USE - The products are used for coloring foodstuffs and **animal feeds**.

ADVANTAGE - Powders which cover a very wide range of colors may be obtained. Reduced amounts of solvent are required.

Member(0007)

ABEQ JP 2000186224 A UPAB 20060115

NOVELTY - Continuous **preparation** of a pulverous carotenoid, retinoid or natural colorant comprises suspending the colorant in a water-immiscible organic solvent, rapidly heating to 100-250degreesC, rapidly mixing the obtained solution at 20-100degreesC with an aqueous solution of a swellable colloid, removing the organic solvent and converting the obtained dispersion to a pulverous **preparation**.

DETAILED DESCRIPTION - Continuous **preparation** of a pulverous carotenoid, retinoid or natural colorant comprises:

(1) suspending the colorant in a water-immiscible organic solvent optionally containing an antioxidant and/or oil;

(2) heating the suspension in a heat exchanger to 100-250degreesC, where the residence time in the heat exchanger is less than 5 sec.;

(3) rapidly mixing the obtained solution at 20-100degreesC with an aqueous solution of a swellable colloid optionally containing a stabilizer;

(4) removing the organic solvent; and

(5) converting the obtained dispersion to a pulverous **preparation**.

USE - The products are used for coloring foodstuffs and **animal feeds**.

ADVANTAGE - Powders which cover a very wide range of colors may be obtained. Reduced amounts of solvent are required.

Member(0010)

ABEQ US 20010008644 A1 UPAB 20060115

NOVELTY - Continuous **preparation** of a pulverous carotenoid, retinoid or natural colorant comprises suspending the colorant in a water-immiscible organic solvent, rapidly heating to 100-250degreesC, rapidly mixing the obtained solution at 20-100degreesC with an aqueous



solution of a swellable colloid, removing the organic solvent and converting the obtained dispersion to a pulverous **preparation**.

DETAILED DESCRIPTION - Continuous **preparation** of a pulverous carotenoid, retinoid or natural colorant comprises:

(1) suspending the colorant in a water-immiscible organic solvent optionally containing an antioxidant and/or oil;

(2) heating the suspension in a heat exchanger to 100-250degreesC, where the residence time in the heat exchanger is less than 5 sec.;

(3) rapidly mixing the obtained solution at 20-100degreesC with an aqueous solution of a swellable colloid optionally containing a stabilizer;

(4) removing the organic solvent; and

(5) converting the obtained dispersion to a pulverous **preparation**.

USE - The products are used for coloring foodstuffs and **animal feeds**.

ADVANTAGE - Powders which cover a very wide range of colors may be obtained. Reduced amounts of solvent are required.

L87 ANSWER 55 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 1998-159551 [14] WPIX  
 CROSS REFERENCE: 1999-180495  
 DOC. NO. CPI: C1998-051572 [14]  
 DOC. NO. NON-CPI: N1998-126727 [14]  
 TITLE: Use of constructs comprising a carotenoid biosynthesis gene - for producing plants and seeds having altered carotenoid levels, modified fatty acid compositions or altered tocopherol levels.  
 DERWENT CLASS: B04; C06; D13; D16; D23; P13  
 INVENTOR: SHEWMAKER C K  
 PATENT ASSIGNEE: (CALJ-C) CALGENE INC; (CALJ-C) CALGENE LLC; (SHEW-I) SHEWMAKER C K  
 COUNTRY COUNT: 70

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 9806862	A1	19980219	(199814)*	EN	69	[13]
ZA 9707469	A	19980429	(199822)#	EN	65	
AU 9740584	A	19980306	(199830)	EN		
EP 925366	A1	19990630	(199930)	EN		
CN 1227609	A	19990901	(199953)	ZH		
BR 9713462	A	20000328	(200029)	PT		
MX 9901353	A1	19991201	(200110)	ES		
JP 2001505409	W	20010424	(200130)	JA	68	
US 20020092039	A1	20020711	(200248)	EN		
US 6429356	B1	20020806	(200254)	EN		
IN 2001000557	I1	20050311	(200577)#	EN	[0]	
US 6972351	B2	20051206	(200580)	EN		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 9806862	A1	WO 1997-US14035	19970808
US 20020092039	A1 Provisional	US 1996-24145P	19960809
US 6429356	B1 Provisional	US 1996-24145P	19960809
US 6972351	B2 Provisional	US 1996-24145P	19960809
AU 9740584	A	AU 1997-40584	19970808

BR 9713462 A	<b>BR 1997-13462 19970808</b>
CN 1227609 A	<b>CN 1997-197150 19970808</b>
EP 925366 A1	<b>EP 1997-938203 19970808</b>
US 20020092039 A1 Cont of	<b>US 1997-908758 19970808</b>
US 6429356 B1	<b>US 1997-908758 19970808</b>
US 6972351 B2 Cont of	<b>US 1997-908758 19970808</b>
EP 925366 A1	<b>WO 1997-US14035 19970808</b>
BR 9713462 A	<b>WO 1997-US14035 19970808</b>
JP 2001505409 W	<b>WO 1997-US14035 19970808</b>
ZA 9707469 A	<b>ZA 1997-7469 19970820</b>
JP 2001505409 W	<b>JP 1998-509911 19970808</b>
MX 9901353 A1	<b>MX 1999-1353 19990208</b>
US 20020092039 A1	<b>US 2002-41472 20020110</b>
US 6972351 B2	<b>US 2002-41472 20020110</b>
IN 2001000557 I1	<b>IN 2001-DE557 20010508</b>

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
US 6972351 B2	Cont of	US 6429356 B
AU 9740584 A	Based on	WO 9806862 A
EP 925366 A1	Based on	WO 9806862 A
BR 9713462 A	Based on	WO 9806862 A
JP 2001505409 W	Based on	WO 9806862 A

PRIORITY APPLN. INFO: **US 1996-24145P 19960809**  
**WO 1997-US14035 19970808**  
**US 1997-908758 19970808**  
**ZA 1997-7469 19970820**  
**US 2002-41472 20020110**  
**IN 2001-DE557 20010508**

AN 1998-159551 [14] WPIX  
 CR 1999-180495  
 AB WO 1998006862 A1 UPAB: 20060201

A method is claimed for altering carotenoid levels in a seed from a host plant, comprising transforming the host plant with a construct comprising as operably linked components, a transcriptional initiation region (TIR) from a gene preferentially expressed in a plant seed, a plastid transit peptide (PTP), a DNA coding sequence of at least one carotenoid biosynthesis (CB) gene, and a transcriptional termination region (TTR). Also claimed are: (1) a method for increasing alpha- and beta-carotene in a seed from a host plant, comprising transforming the host plant with an expression cassette comprising as operably linked components, a TIR from a gene preferentially expressed in a plant seed, a PTP, a DNA coding sequence of a primary gene, and a TTR, where the primary gene is an early CB gene selected from geranylgeranyl pyrophosphate synthase (GPS), phytoene synthase (PS), phytoene desaturase (PD), and isopentenyl diphosphate isomerase (IDI); (2) a transgenic plant or seed produced by the plant which has altered carotenoid levels; and (3) oil and/or meal extracted from the seeds of (2).

USE - The plants and seeds obtained can have altered carotenoid levels. They can be used for the production of particular carotenoids, e.g. alpha-carotene, beta-carotene, lycopene, lutein, zeaxanthin, canthaxanthin, alpha-cryptoxanthin, beta-cryptoxanthin, zeta-carotene, phytofluene, neurosporane, or **astaxanthin**. The carotenoids can be used as supplements, particularly vitamin supplements, as vegetable oil based food products and food ingredients, as **feed** additives in **animal feeds**, as colourants or therapeutic agents. The plants and seeds can also have altered levels of tocopherols. The plants and seeds can also have modified fatty acid compositions, e.g. increased levels of oleic acid and decreased levels of linoleic and/or

linolenic acid. - The CB genes may also be used as a marker for transformed plants/seeds.

Member(0012)

ABEQ IN 200100557 I1 UPAB 20060112

NOVELTY - Oil or meal having increased carotenoid level from a seed, oil or meal having altered tocopherol composition or level from a seed, or oil or meal having an altered fatty acid composition or level from a seed, is provided. The oil or meal is **prepared** by transforming a plant with a construct comprising as operably linked components, a transcriptional initiation region from a gene preferentially expressed in a plant seed, a nucleic acid coding sequence of a plastid transit peptide, a DNA coding sequence of at least one carotenoid biosynthesis gene, and a transcriptional termination region, where the method results in increased carotenoid level, and the increased carotenoid level is increased least 10 fold over carotenoid levels in seed of a native plant; and the method results in seed having an increased tocopherol composition or level compared to seed of a native plant, or having an altered fatty acid composition or level compared to seed of a native plant. Image 0/0

L87 ANSWER 56 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 1998-299084 [27] WPIX  
 DOC. NO. CPI: C1998-093323 [27]  
 TITLE: Stable liquid, oil-miscible carotenoid  
**preparation** - comprising particles dispersed in aqueous phase itself dispersed in oil, used e.g. as colourant in food or **feedstuff** compositions  
 DERWENT CLASS: B05; B07; D13; D21; E24  
 INVENTOR: LUEDDECKE E; MEYER J; PFEIFFER A; PFEIFFER A M  
 PATENT ASSIGNEE: (BADI-C) BASF AG  
 COUNTRY COUNT: 28

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
DE 19649062	A1	19980528	(199827)*	DE	4[0]	
EP 845503	A2	19980603	(199827)	DE		
NO 9705441	A	19980528	(199831)	NO		
JP 10168333	A	19980623	(199835)	JA	5	
US 5863953	A	19990126	(199911)	EN		
NO 308173	B1	20000807	(200045)	NO		
EP 845503	B1	20010606	(200133)	DE		
DE 59703725	G	20010712	(200140)	DE		
ES 2158426	T3	20010901	(200161)	ES		
CN 1185433	A	19980624	(200255)	ZH		
TW 529915	A	20030501	(200373)	ZH		
CN 1104234	C	20030402	(200538)	ZH		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 19649062	A1	DE 1996-19649062	19961127
DE 59703725	G	DE 1997-59703725	19971103
EP 845503	A2	EP 1997-119150	19971103
EP 845503	B1	EP 1997-119150	19971103
DE 59703725	G	EP 1997-119150	19971103
ES 2158426	T3	EP 1997-119150	19971103

TW 529915 A  
 US 5863953 A  
 JP 10168333 A  
 CN 1185433 A  
 CN 1104234 C  
 NO 9705441 A  
 NO 308173 B1

**TW 1997-116717 19971110**  
**US 1997-972392 19971118**  
**JP 1997-322938 19971125**  
**CN 1997-122957 19971126**  
**CN 1997-122957 19971126**  
**NO 1997-5441 19971126**  
**NO 1997-5441 19971126**

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
DE 59703725 G	Based on	EP 845503 A
ES 2158426 T3	Based on	EP 845503 A
NO 308173 B1	Previous Publ	NO 9705441 A

PRIORITY APPLN. INFO: **DE 1996-19649062 19961127**

AN 1998-299084 [27] WPIX

AB DE 19649062 A1 UPAB: 20060114

A liquid, oil-miscible carotenoid (I) **preparation** (A) comprises a double dispersion system, consisting of a dispersion in oil of droplets (having particle size below 100 µm) of an aqueous phase containing dispersed particles of (I) stabilised by a protective colloid.

USE - (I) are yellow to red natural pigments, useful e.g. in foods, **feedstuffs**, cosmetics or pharmaceuticals (where they also may show pro-vitamin A activity). The use of (A) is claimed as an additive to **animal feed**, foodstuffs, cosmetics and/or pharmaceuticals. Typically (A) is added to the **feed** for farmed fish to colour the flesh of the fish.

ADVANTAGE - (A) have good physical and chemical stability, have high bioavailability and are more easily dosed than corresponding solid formulations. They are especially suitable for use in applications requiring good oil-solubility, e.g. for dilution with oils for incorporation in extruded fish **feed** or for colouring foodstuffs such as margarine.

## Member(0002)

ABEQ EP 845503 A2 UPAB 20060114

A liquid, oil-miscible carotenoid (I) **preparation** (A) comprises a double dispersion system, consisting of a dispersion in oil of droplets (having particle size below 100 µm) of an aqueous phase containing dispersed particles of (I) stabilised by a protective colloid.

USE - (I) are yellow to red natural pigments, useful e.g. in foods, **feedstuffs**, cosmetics or pharmaceuticals (where they also may show pro-vitamin A activity). The use of (A) is claimed as an additive to **animal feed**, foodstuffs, cosmetics and/or pharmaceuticals. Typically (A) is added to the **feed** for farmed fish to colour the flesh of the fish.

ADVANTAGE - (A) have good physical and chemical stability, have high bioavailability and are more easily dosed than corresponding solid formulations. They are especially suitable for use in applications requiring good oil-solubility, e.g. for dilution with oils for incorporation in extruded fish **feed** or for colouring foodstuffs such as margarine.

## Member(0004)

ABEQ JP 10168333 A UPAB 20060114

A liquid, oil-miscible carotenoid (I) **preparation** (A) comprises a double dispersion system, consisting of a dispersion in oil of droplets (having particle size below 100 µm) of an aqueous phase containing

dispersed particles of (I) stabilised by a protective colloid.

USE - (I) are yellow to red natural pigments, useful e.g. in foods, **feedstuffs**, cosmetics or pharmaceuticals (where they also may show pro-vitamin A activity). The use of (A) is claimed as an additive to **animal feed**, foodstuffs, cosmetics and/or pharmaceuticals. Typically (A) is added to the **feed** for farmed fish to colour the flesh of the fish.

ADVANTAGE - (A) have good physical and chemical stability, have high bioavailability and are more easily dosed than corresponding solid formulations. They are especially suitable for use in applications requiring good oil-solubility, e.g. for dilution with oils for incorporation in extruded fish **feed** or for colouring foodstuffs such as margarine.

Member(0005)

ABEQ US 5863953 A UPAB 20060114

A liquid, oil-miscible carotenoid (I) **preparation** (A) comprises a double dispersion system, consisting of a dispersion in oil of droplets (having particle size below 100 µm) of an aqueous phase containing dispersed particles of (I) stabilised by a protective colloid.

USE - (I) are yellow to red natural pigments, useful e.g. in foods, **feedstuffs**, cosmetics or pharmaceuticals (where they also may show pro-vitamin A activity). The use of (A) is claimed as an additive to **animal feed**, foodstuffs, cosmetics and/or pharmaceuticals. Typically (A) is added to the **feed** for farmed fish to colour the flesh of the fish.

ADVANTAGE - (A) have good physical and chemical stability, have high bioavailability and are more easily dosed than corresponding solid formulations. They are especially suitable for use in applications requiring good oil-solubility, e.g. for dilution with oils for incorporation in extruded fish **feed** or for colouring foodstuffs such as margarine.

Member(0007)

ABEQ EP 845503 B1 UPAB 20060114

A liquid, oil-miscible carotenoid (I) **preparation** (A) comprises a double dispersion system, consisting of a dispersion in oil of droplets (having particle size below 100 µm) of an aqueous phase containing dispersed particles of (I) stabilised by a protective colloid.

USE - (I) are yellow to red natural pigments, useful e.g. in foods, **feedstuffs**, cosmetics or pharmaceuticals (where they also may show pro-vitamin A activity). The use of (A) is claimed as an additive to **animal feed**, foodstuffs, cosmetics and/or pharmaceuticals. Typically (A) is added to the **feed** for farmed fish to colour the flesh of the fish.

ADVANTAGE - (A) have good physical and chemical stability, have high bioavailability and are more easily dosed than corresponding solid formulations. They are especially suitable for use in applications requiring good oil-solubility, e.g. for dilution with oils for incorporation in extruded fish **feed** or for colouring foodstuffs such as margarine.

L87	ANSWER 57 OF 71	WPIX COPYRIGHT 2007	THE THOMSON CORP on STN
ACCESSION NUMBER:	1997-489294 [45]	WPIX	
DOC. NO. CPI:	C1997-155890 [45]		
TITLE:	Increasing performance of breeding and production mammals - by use of a xanthophyll, e.g. <b>astaxanthin</b> or its ester, in <b>feed</b> , improves immunity, and litter survival and growth.		
DERWENT CLASS:	B05; C03; D13; D16		

INVENTOR: INBORR J; LIGNELL A  
 PATENT ASSIGNEE: (ASTA-N) ASTACAROTENE AB; (SVFO-N) SVENSKA FODER AB  
 COUNTRY COUNT: 64

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 9735491	A1	19971002	(199745)	* EN	14	[0]
SE 9601197	A	19970928	(199750)	SV		
SE 506191	C2	19971117	(199801)	SV		
AU 9723133	A	19971017	(199807)	EN		
CZ 9803029	A3	19990217	(199913)	CS		
EP 912106	A1	19990506	(199922)	EN		
NZ 331861	A	19991028	(199953)	EN		
HU 9903543	A2	20000228	(200020)	HU		
AU 716605	B	20000302	(200021)	EN		
US 6054491	A	20000425	(200027)	EN		
JP 2000507821	W	20000627	(200036)	JA	13	
IL 126029	A	20010111	(200107)	EN		
EP 912106	B1	20031119	(200377)	EN		
DE 69726279	E	20031224	(200408)	DE		
CA 2249456	C	20041005	(200466)	EN		
JP 3620858	B2	20050216	(200513)	JA	8	

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
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## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
SE 9601197	A	SE 1996-1197	19960327
SE 506191	C2	SE 1996-1197	19960327
AU 9723133	A	AU 1997-23133	19970321
AU 716605	B	AU 1997-23133	19970321
CA 2249456	C	CA 1997-2249456	19970321
DE 69726279	E	DE 1997-69726279	19970321
EP 912106	A1	EP 1997-915802	19970321
EP 912106	B1	EP 1997-915802	19970321
DE 69726279	E	EP 1997-915802	19970321
IL 126029	A	IL 1997-126029	19970321
JP 2000507821	W	JP 1997-534316	19970321
JP 3620858	B2	JP 1997-534316	19970321
NZ 331861	A	NZ 1997-331861	19970321
CZ 9803029	A3	WO 1997-SE488	19970321
EP 912106	A1	WO 1997-SE488	19970321
NZ 331861	A	WO 1997-SE488	19970321
HU 9903543	A2	WO 1997-SE488	19970321
US 6054491	A	WO 1997-SE488	19970321
JP 2000507821	W	WO 1997-SE488	19970321
EP 912106	B1	WO 1997-SE488	19970321
DE 69726279	E	WO 1997-SE488	19970321
CA 2249456	C	WO 1997-SE488	19970321
JP 3620858	B2	WO 1997-SE488	19970321
CZ 9803029	A3	CZ 1998-3029	19970321
US 6054491	A	US 1998-147046	19980925
HU 9903543	A2	HU 1999-3543	19970321

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 716605 B	Previous Publ	AU 9723133 A
DE 69726279 E	Based on	EP 912106 A
JP 3620858 B2	Previous Publ	JP 2000507821 W
AU 9723133 A	Based on	WO 9735491 A
CZ 9803029 A3	Based on	WO 9735491 A
EP 912106 A1	Based on	WO 9735491 A
NZ 331861 A	Based on	WO 9735491 A
HU 9903543 A2	Based on	WO 9735491 A
AU 716605 B	Based on	WO 9735491 A
US 6054491 A	Based on	WO 9735491 A
JP 2000507821 W	Based on	WO 9735491 A
EP 912106 B1	Based on	WO 9735491 A
DE 69726279 E	Based on	WO 9735491 A
CA 2249456 C	Based on	WO 9735491 A
JP 3620858 B2	Based on	WO 9735491 A

PRIORITY APPLN. INFO: **SE 1996-1197 19960327**

AN 1997-489294 [45] WPIX

AB WO 1997035491 A1 UPAB: 20060113

Agent for increasing performance of breeding and production animals, comprises at least one type of xanthophyll.

USE - The agent is of use in the food, livestock, or breeding or domestic animal industries, specific animals including pigs, cattle, sheep, horses, and dogs. The agent increases productivity, improving fertility, provides more progeny born alive, lower post-natal mortality, increased growth in the sucking period, higher milk production, shorter recovery period between weaning and next heat, and generally improved state of health due to strengthened immunity. The effects may be due to antioxidant properties of the agent.

Member(0006)

ABEQ EP 912106 A1 UPAB 20060113

Agent for increasing performance of breeding and production animals, comprises at least one type of xanthophyll.

USE - The agent is of use in the food, livestock, or breeding or domestic animal industries, specific animals including pigs, cattle, sheep, horses, and dogs. The agent increases productivity, improving fertility, provides more progeny born alive, lower post-natal mortality, increased growth in the sucking period, higher milk production, shorter recovery period between weaning and next heat, and generally improved state of health due to strengthened immunity. The effects may be due to antioxidant properties of the agent.

Member(0010)

ABEQ US 6054491 A UPAB 20060113

Agent for increasing performance of breeding and production animals, comprises at least one type of xanthophyll.

USE - The agent is of use in the food, livestock, or breeding or domestic animal industries, specific animals including pigs, cattle, sheep, horses, and dogs. The agent increases productivity, improving fertility, provides more progeny born alive, lower post-natal mortality, increased growth in the sucking period, higher milk production, shorter recovery period between weaning and next heat, and generally improved

state of health due to strengthened immunity. The effects may be due to antioxidant properties of the agent.

Member(0011)

ABEQ JP 2000507821 W UPAB 20060113

Agent for increasing performance of breeding and production animals, comprises at least one type of xanthophyll.

USE - The agent is of use in the food, livestock, or breeding or domestic animal industries, specific animals including pigs, cattle, sheep, horses, and dogs. The agent increases productivity, improving fertility, provides more progeny born alive, lower post-natal mortality, increased growth in the sucking period, higher milk production, shorter recovery period between weaning and next heat, and generally improved state of health due to strengthened immunity. The effects may be due to antioxidant properties of the agent.

L87 ANSWER 58 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 1997-014332 [02] WPIX  
 DOC. NO. CPI: C1997-004009 [02]  
 TITLE: Recovering **astaxanthin** carotenoid pigment from  
 Haematococcus pluvialis - by comminuting the algae in  
 liquid medium in high pressure appts. with pressure vessel  
 and interaction chamber  
 DERWENT CLASS: D13; E14; E24; P41  
 INVENTOR: GALIT M; GAVRIELI J; JONAH G; MESHULAM-SIMON G;  
 MESHULLAM-SIMON G  
 PATENT ASSIGNEE: (IRRM-C) IMI TAMI INST RES & DEV LTD  
 COUNTRY COUNT: 7

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
GB 2301587	A	19961211	(199702)*	EN	17[2]	
DE 19620471	A1	19961205	(199703)	DE	12[8]	
NO 9602225	A	19961202	(199706)	NO		
AU 9652483	A	19961212	(199707)	EN		
CA 2177752	A	19961201	(199714)	EN		
JP 09111139	A	19970428	(199727)	JA	5[0]	
GB 2301587	B	19981118	(199848)	EN		
IL 113935	A	19990922	(200002)	EN		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
GB 2301587	A	<b>GB 1996-10213</b>	<b>19960516</b>
IL 113935	A	<b>IL 1995-113935</b>	<b>19950531</b>
GB 2301587	B	<b>GB 1996-10213</b>	<b>19960516</b>
DE 19620471	A1	<b>DE 1996-19620471</b>	<b>19960521</b>
AU 9652483	A	<b>AU 1996-52483</b>	<b>19960523</b>
CA 2177752	A	<b>CA 1996-2177752</b>	<b>19960530</b>
JP 09111139	A	<b>JP 1996-136890</b>	<b>19960530</b>
NO 9602225	A	<b>NO 1996-2225</b>	<b>19960530</b>

PRIORITY APPLN. INFO: **IL 1995-113935 19950531**

AN 1997-014332 [02] WPIX

AB GB 2301587 A UPAB: 20050514

**Astaxanthin** carotenoid pigment is recovered from {IHaematococcus pluvialisI} algae, by: (a) comminuting the algae in a liquid medium by rupturing the cell



walls; and (b) dispersing the pigment liberated. Comminution is carried out in a high pressure appts. comprising a consecutive pressure vessel and interaction chamber. The **process** comprises: (i) forming a slurry of algae containing above 1wt. % solids (pref. 5-10 weight % solids); (ii) inserting this into the pressure vessel maintained at 2000 p.s.i. or more; and (iii) conveying the slurry into the interaction chamber maintained at above 10000 p.s.i. The interaction chamber contains 1 or more channel through which the slurry is passed at an increased velocity to form a turbulent jet which ruptures the algae cell walls. The disintegrated particles obtd. are impinged within a low pressure zone, where the pigment is released, then recovered.

USE - The pigment is useful for incorporation into food for fish, and in other **animal feeds**.

ADVANTAGE - The **process** enables an efficient rupture of algae cell walls without stringent conditions.

Member(0002)

ABEQ DE 19620471 A1 UPAB 20050514

**Astaxanthin** carotenoid pigment is recovered from {IHaematococcus pluvialisI} algae, by: (a) comminuting the algae in a liq. medium by rupturing the cell walls; and (b) dispersing the pigment liberated. Comminution is carried out in a high pressure appts. comprising a consecutive pressure vessel and interaction chamber. The **process** comprises: (i) forming a slurry of algae contg. above 1wt. % solids (pref. 5-10 wt. % solids); (ii) inserting this into the pressure vessel maintained at 2000 p.s.i. or more; and (iii) conveying the slurry into the interaction chamber maintained at above 10000 p.s.i. The interaction chamber contains 1 or more channel through which the slurry is passed at an increased velocity to form a turbulent jet which ruptures the algae cell walls. The disintegrated particles obtd. are impinged within a low pressure zone, where the pigment is released, then recovered.

USE - The pigment is useful for incorporation into food for fish, and in other **animal feeds**.

ADVANTAGE - The **process** enables an efficient rupture of algae cell walls without stringent conditions.

Member(0006)

ABEQ JP 09111139 A UPAB 20050514

**Astaxanthin** carotenoid pigment is recovered from {IHaematococcus pluvialisI} algae, by: (a) comminuting the algae in a liq. medium by rupturing the cell walls; and (b) dispersing the pigment liberated. Comminution is carried out in a high pressure appts. comprising a consecutive pressure vessel and interaction chamber. The **process** comprises: (i) forming a slurry of algae contg. above 1wt. % solids (pref. 5-10 wt. % solids); (ii) inserting this into the pressure vessel maintained at 2000 p.s.i. or more; and (iii) conveying the slurry into the interaction chamber maintained at above 10000 p.s.i. The interaction chamber contains 1 or more channel through which the slurry is passed at an increased velocity to form a turbulent jet which ruptures the algae cell walls. The disintegrated particles obtd. are impinged within a low pressure zone, where the pigment is released, then recovered.

USE - The pigment is useful for incorporation into food for fish, and in other **animal feeds**.

ADVANTAGE - The **process** enables an efficient rupture of algae cell walls without stringent conditions.

Member(0007)

ABEQ GB 2301587 B UPAB 20050514

**Astaxanthin** carotenoid pigment is recovered from {IHaematococcus pluvialisI} algae, by: (a) comminuting the algae in a liq. medium by

rupturing the cell walls; and (b) dispersing the pigment liberated. Comminution is carried out in a high pressure appts. comprising a consecutive pressure vessel and interaction chamber. The **process** comprises: (i) forming a slurry of algae contg. above 1wt. % solids (pref. 5-10 wt. % solids); (ii) inserting this into the pressure vessel maintained at 2000 p.s.i. or more; and (iii) conveying the slurry into the interaction chamber maintained at above 10000 p.s.i. The interaction chamber contains 1 or more channel through which the slurry is passed at an increased velocity to form a turbulent jet which ruptures the algae cell walls. The disintegrated particles obtd. are impinged within a low pressure zone, where the pigment is released, then recovered.

USE - The pigment is useful for incorporation into food for fish, and in other **animal feeds**.

ADVANTAGE - The **process** enables an efficient rupture of algae cell walls without stringent conditions.

L87 ANSWER 59 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 1997-023160 [03] WPIX  
 DOC. NO. CPI: C1997-007548 [03]  
 TITLE: Flavobacterium gene sequences encoding carotenoid biosynthesis enzymes - for the production of carotenoid(s), useful in foods and **animal feeds**  
 DERWENT CLASS: D13; D16; E15  
 INVENTOR: HOHMANN H; PASAMONTES L; TESSIER M; VAN LOON A  
 PATENT ASSIGNEE: (STAM-C) DSM IP ASSETS BV; (HOFF-C) HOFFMANN LA ROCHE & CO AG F; (HOHM-I) HOHMANN H; (PASA-I) PASAMONTES L; (HOFF-C) ROCHE VITAMINS INC; (TESS-I) TESSIER M; (VLOO-I) VAN LOON A  
 COUNTRY COUNT: 14  
 PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
EP 747483	A2	19961211	(199703)*	EN	80[28]	
JP 09023888	A	19970128	(199714)	JA	88[0]	
EP 747483	A3	19970507	(199731)	EN		
US 6087152	A	20000711	(200037)	EN		
US 6124113	A	20000926	(200051)	EN		
CN 1141952	A	19970205	(200053)	ZH		
US 6207409	B1	20010327	(200119)	EN		
US 20020147371	A1	20021010	(200269)	EN		
US 6613543	B2	20030902	(200359)	EN		
EP 747483	B1	20040324	(200422)	EN		
DE 69631924	E	20040429	(200429)	DE		
ES 2216027	T3	20041016	(200469)	ES		
CN 1607253	A	20050420	(200554)	ZH		
CN 1168828	C	20040929	(200626)	ZH		

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 747483	A2	EP 1996-108556	19960529
DE 69631924	E	DE 1996-631924	19960529
EP 747483	A3	EP 1996-108556	19960529
DE 69631924	E	EP 1996-108556	19960529
ES 2216027	T3	EP 1996-108556	19960529
CN 1141952	A	CN 1996-108114	19960607

CN 1607253 A Div Ex	CN 1996-108114 19960607
CN 1168828 C	CN 1996-108114 19960607
US 6087152 A	US 1996-660645 19960607
US 6124113 A Div Ex	US 1996-660645 19960607
US 6207409 B1 Div Ex	US 1996-660645 19960607
US 20020147371 A1 Div Ex	US 1996-660645 19960607
US 6613543 B2 Div Ex	US 1996-660645 19960607
JP 09023888 A	JP 1996-146862 19960610
US 6124113 A	US 1999-298718 19990423
US 6207409 B1 Div Ex	US 1999-298718 19990423
US 20020147371 A1 Div Ex	US 1999-298718 19990423
US 6613543 B2 Div Ex	US 1999-298718 19990423
US 6207409 B1	US 2000-546969 20000411
US 20020147371 A1	US 2000-547267 20000411
US 6613543 B2	US 2000-547267 20000411
CN 1607253 A	CN 2004-10055818 19960607

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
DE 69631924 E	Based on	EP 747483 A
ES 2216027 T3	Based on	EP 747483 A
US 6207409 B1	Div ex	US 6087152 A
US 6613543 B2	Div ex	US 6087152 A
US 6207409 B1	Div ex	US 6124113 A
US 6613543 B2	Div ex	US 6124113 A

## PRIORITY APPLN. INFO: EP 1995-108888 19950609

AN 1997-023160 [03] WPIX

AB EP 747483 A2 UPAB: 20060112

DNA sequences comprising one or more of the following *Flavobacterium* sp. R1534 genes are new: (i) the crtE gene encoding geranylgeranyl pyrophosphate (GGPP) synthase; (ii) the crtB gene encoding **prephytoene** synthase; (iii) the crtI gene encoding phytoene desaturase; (iv) the crtY gene encoding lycopene cyclase; and (v) the crtZ gene encoding  $\beta$ -carotene hydroxylase.

USE - The recombinant cells can be cultured to produce carotenoids useful as food and **animal feed** additives, especially lycopene when the cells contain the crtE, crtB and crtI genes,  $\beta$ -carotene when the cells contain the crtE, crtB, crtI and crtY genes, echinenone or canthaxanthin when the cells contain the crtE, crtB, crtI and crtY genes and the *Alcaligenes* strain PC-1 crtW gene encoding  $\beta$ -carotene  $\beta$ 4-oxygenase, or zeaxanthin, adonixanthin or **astaxanthin** when the cells contain the crtE, crtB, crtI, crtY, crtZ and crtW genes.

Member(0002)

ABEQ JP 09023888 A UPAB 20060112

DNA sequences comprising one or more of the following *Flavobacterium* sp. R1534 genes are new: (i) the crtE gene encoding geranylgeranyl pyrophosphate (GGPP) synthase; (ii) the crtB gene encoding **prephytoene** synthase; (iii) the crtI gene encoding phytoene desaturase; (iv) the crtY gene encoding lycopene cyclase; and (v) the crtZ gene encoding  $\beta$ -carotene hydroxylase.

USE - The recombinant cells can be cultured to produce carotenoids useful as food and **animal feed** additives, esp. lycopene when the cells contain the crtE, crtB and crtI genes,  $\beta$ -carotene when the cells contain the crtE, crtB, crtI and crtY genes, echinenone or canthaxanthin when the cells contain the crtE, crtB,

crtI and crtY genes and the *Alcaligenes* strain PC-1 crtW gene encoding  $\beta$ -carotene  $\beta$ 4-oxygenase, or zeaxanthin, adonixanthin or **astaxanthin** when the cells contain the crtE, crtB, crtI, crtY, crtZ and crtW genes.

Member(0004)

ABEQ US 6087152 A UPAB 20060112

DNA sequences comprising one or more of the following *Flavobacterium* sp. R1534 genes are new: (i) the crtE gene encoding geranylgeranyl pyrophosphate (GGPP) synthase; (ii) the crtB gene encoding **prephytoene** synthase; (iii) the crtI gene encoding phytoene desaturase; (iv) the crtY gene encoding lycopene cyclase; and (v) the crtZ gene encoding  $\beta$ -carotene hydroxylase.

USE - The recombinant cells can be cultured to produce carotenoids useful as food and **animal feed** additives, esp. lycopene when the cells contain the crtE, crtB and crtI genes,  $\beta$ -carotene when the cells contain the crtE, crtB, crtI and crtY genes, echinenone or canthaxanthin when the cells contain the crtE, crtB, crtI and crtY genes and the *Alcaligenes* strain PC-1 crtW gene encoding  $\beta$ -carotene  $\beta$ 4-oxygenase, or zeaxanthin, adonixanthin or **astaxanthin** when the cells contain the crtE, crtB, crtI, crtY, crtZ and crtW genes.

Member(0005)

ABEQ US 6124113 A UPAB 20060112

DNA sequences comprising one or more of the following *Flavobacterium* sp. R1534 genes are new: (i) the crtE gene encoding geranylgeranyl pyrophosphate (GGPP) synthase; (ii) the crtB gene encoding **prephytoene** synthase; (iii) the crtI gene encoding phytoene desaturase; (iv) the crtY gene encoding lycopene cyclase; and (v) the crtZ gene encoding  $\beta$ -carotene hydroxylase.

USE - The recombinant cells can be cultured to produce carotenoids useful as food and **animal feed** additives, esp. lycopene when the cells contain the crtE, crtB and crtI genes,  $\beta$ -carotene when the cells contain the crtE, crtB, crtI and crtY genes, echinenone or canthaxanthin when the cells contain the crtE, crtB, crtI and crtY genes and the *Alcaligenes* strain PC-1 crtW gene encoding  $\beta$ -carotene  $\beta$ 4-oxygenase, or zeaxanthin, adonixanthin or **astaxanthin** when the cells contain the crtE, crtB, crtI, crtY, crtZ and crtW genes.

Member(0006)

ABEQ CN 1141952 A UPAB 20060112

DNA sequences comprising one or more of the following *Flavobacterium* sp. R1534 genes are new: (i) the crtE gene encoding geranylgeranyl pyrophosphate (GGPP) synthase; (ii) the crtB gene encoding **prephytoene** synthase; (iii) the crtI gene encoding phytoene desaturase; (iv) the crtY gene encoding lycopene cyclase; and (v) the crtZ gene encoding  $\beta$ -carotene hydroxylase.

USE - The recombinant cells can be cultured to produce carotenoids useful as food and **animal feed** additives, esp. lycopene when the cells contain the crtE, crtB and crtI genes,  $\beta$ -carotene when the cells contain the crtE, crtB, crtI and crtY genes, echinenone or canthaxanthin when the cells contain the crtE, crtB, crtI and crtY genes and the *Alcaligenes* strain PC-1 crtW gene encoding  $\beta$ -carotene  $\beta$ 4-oxygenase, or zeaxanthin, adonixanthin or **astaxanthin** when the cells contain the crtE, crtB, crtI, crtY, crtZ and crtW genes.

Member(0007)

ABEQ US 6207409 B1 UPAB 20060112

DNA sequences comprising one or more of the following *Flavobacterium* sp. R1534 genes are new: (i) the crtE gene encoding geranylgeranyl pyrophosphate (GGPP) synthase; (ii) the crtB gene encoding **prephytoene** synthase; (iii) the crtI gene encoding phytoene desaturase; (iv) the crtY gene encoding lycopene cyclase; and (v) the crtZ gene encoding  $\beta$ -carotene hydroxylase.

USE - The recombinant cells can be cultured to produce carotenoids useful as food and **animal feed** additives, esp. lycopene when the cells contain the crtE, crtB and crtI genes,  $\beta$ -carotene when the cells contain the crtE, crtB, crtI and crtY genes, echinenone or canthaxanthin when the cells contain the crtE, crtB, crtI and crtY genes and the *Alcaligenes* strain PC-1 crtW gene encoding  $\beta$ -carotene  $\beta$ 4-oxygenase, or zeaxanthin, adonixanthin or **astaxanthin** when the cells contain the crtE, crtB, crtI, crtY, crtZ and crtW genes.

L87 ANSWER 60 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

ACCESSION NUMBER: 1994-341371 [42] WPIX

DOC. NO. CPI: C1994-155455 [42]

TITLE: High level **astaxanthin** producing strains of *Phaffia rhodozyma* - also improved production of pigment by extending maturation, prod. used opt. as dried cells, as **feed**, partic. in aquaculture.

DERWENT CLASS: D13; D16; E24

INVENTOR: JACOBSON G K; JOLLY S O; SEDMAK J J; SKATRUD T J;  
WASILESKI J M

PATENT ASSIGNEE: (ARCH-C) ARCHER-DANIELS MIDLAND CO; (JACO-I) JACOBSON G K; (JOLL-I) JOLLY S O; (SEDM-I) SEDMAK J J; (SKAT-I) SKATRUD T J; (UVFO-N) UNIVERSAL FOODS CORP; (WASI-I) WASILESKI J M

COUNTRY COUNT: 40

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 9423594	A1	19941027	(199442)*	EN	50[9]	
AU 9350086	A	19941108	(199507)	EN		
US 5466599	A	19951114	(199551)	EN	16[11]	
NO 9504052	A	19951211	(199607)	NO		
EP 708604	A1	19960501	(199622)	EN		
JP 08508885	W	19960924	(199704)	JA	39[0]	
NZ 255742	A	19970526	(199727)	EN		
AU 688280	B	19980312	(199822)	EN		
US 5922560	A	19990713	(199934)	EN		
US 6015684	A	20000118	(200011)	EN		
US 6413736	B1	20020702	(200248)	EN		
US 20030049241	A1	20030313	(200321)	EN		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 9423594	A1	WO 1993-US7600	19930813
US 5466599	A	US 1993-49825	19930419
US 5922560	A Cont of	US 1993-49825	19930419

US 6015684 A Cont of	US 1993-49825 19930419
US 6413736 B1 Cont of	US 1993-49825 19930419
US 20030049241 A1 Cont of	US 1993-49825 19930419
AU 9350086 A	AU 1993-50086 19930813
AU 688280 B	AU 1993-50086 19930813
EP 708604 A1	EP 1993-920013 19930813
NZ 255742 A	NZ 1993-255742 19930813
NO 9504052 A	WO 1993-US7600 19930813
EP 708604 A1	WO 1993-US7600 19930813
JP 08508885 W	WO 1993-US7600 19930813
NZ 255742 A	WO 1993-US7600 19930813
JP 08508885 W	JP 1994-523097 19930813
NO 9504052 A	NO 1995-4052 19951012
US 5922560 A	US 1995-557714 19951113
US 6015684 A Div Ex	US 1995-557714 19951113
US 6413736 B1 Div Ex	US 1995-557714 19951113
US 20030049241 A1 Div Ex	US 1995-557714 19951113
US 6015684 A	US 1997-967034 19971110
US 6413736 B1 Div Ex	US 1997-967034 19971110
US 20030049241 A1 Div Ex	US 1997-967034 19971110
US 6413736 B1	US 1999-372991 19990812
US 20030049241 A1 Div Ex	US 1999-372991 19990812
US 20030049241 A1	US 2002-140283 20020508

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 688280 B	Previous Publ	AU 9350086 A
US 5922560 A	Cont of	US 5466599 A
US 6015684 A	Cont of	US 5466599 A
US 6413736 B1	Cont of	US 5466599 A
US 20030049241 A1	Cont of	US 5466599 A
US 6015684 A	Div ex	US 5922560 A
US 6413736 B1	Div ex	US 5922560 A
US 20030049241 A1	Div ex	US 5922560 A
US 6413736 B1	Div ex	US 6015684 A
US 20030049241 A1	Div ex	US 6015684 A
US 20030049241 A1	Div ex	US 6413736 B
AU 9350086 A	Based on	WO 9423594 A
EP 708604 A1	Based on	WO 9423594 A
JP 08508885 W	Based on	WO 9423594 A
NZ 255742 A	Based on	WO 9423594 A
AU 688280 B	Based on	WO 9423594 A

PRIORITY APPLN. INFO: **US 1993-49825 19930419**  
**US 1995-557714 19951113**  
**US 1997-967034 19971110**  
**US 1999-372991 19990812**  
**US 2002-140283 20020508**

AN 1994-341371 [42] WPIX  
 AB WO 1994023594 A1 UPAB: 20050824

A strain of *Phaffia rhodozyma* (PR), which produces  $\geq 3000$  ppm **astaxanthin** (ZX) based on dry yeast solids, when cultivated in  $\geq 1500$  l of nutrient medium containing more than 4 weight% yeast solids, is new.  
 Also new is an improved fermentation method for production of AX from a PR strain, comprising cultivating the PR cells in nutrient medium containing a rapidly metabolised energy source, maintained over at least part of the cultivation such that the PR experiences: (i) a growth phase, during which the PR cells increase rapidly and produce AX, and in which the energy source is

fed in at a rate such that it does not accumulate in the medium in excess of a predetermined level; followed by (ii) a maturation phase, during which the increase in cell nos. slows but AX production continues at a rate at least as high as during phase (i); in which the improvement comprises extending phase (ii).

USE - AX is a carotenoid pigment responsible for the colour of certain food prods., partic. salmon, sea bream, trout, shrimp, lobster, and other crustaceans, which plays a critical nutritional role in their life. A distinct red colour also improves consumer acceptance of certain food prods., e.g. flesh, poultry, eggs and dairy prods., or snack foods. - The AX need not be isolated as such; the yeast prod. can be made into a cream, dried, and formulated for aquaculture of salmonids, crustaceans, or bream; the cells need not be broken, as unbroken cells, as from spray or drum drying mfr., provide AX almost as efficiently as cells broken by milling or enzymic treatments. The **feed** contains 0.1-10, pref 1-3% of the dried prod.

ADVANTAGE - The AX production of the new PR strains, and the improved production method, provide an economically viable AX production **process**, competitive with synthetic AX. Targets of even 4000 ppm AX are possible in the culture.

Member(0003)

ABEQ US 5466599 A UPAB 20050824

Phaffia rhodozyma strains ATCC-74218, ATCC-74219, ATCC-74220, ATCC-74221 **and** their mutants retain astaxanthin-producing capability. Cultivation used 1500 l, or more nutrient medium contg. 4% or more dry yeast solids, such that maturation phase is extended by exposing yeast cells to low-intensity light, slow **feeding** them glucose or other rapidly-metabolised energy source, and replacing this with glycerol or other slowly-metabolised energy source. More than 3000 ppm prod. is obtd. w.r.t. dry yeast solids.

USE - To enhance red pigmentation of **animal feeds**, esp. **feeds** for salmonoid fishes.

Member(0006)

ABEQ JP 08508885 W UPAB 20050824

A strain of Phaffia rhodozyma (PR), which produces  $\geq 3000$  ppm **astaxanthin** (ZX) based on dry yeast solids, when cultivated in  $\geq 1500$  l of nutrient medium contg. more than 4 wt.% yeast solids, is new.

Also new is an improved fermentation method for prodn. of AX from a PR strain, comprising cultivating the PR cells in nutrient medium contg. a rapidly metabolised energy source, maintained over at least part of the cultivation such that the PR experiences: (i) a growth phase, during which the PR cells increase rapidly and produce AX, and in which the energy source is fed in at a rate such that it does not accumulate in the medium in excess of a predetermined level; followed by (ii) a maturation phase, during which the increase in cell nos. slows but AX prodn. continues at a rate at least as high as during phase (i); in which the improvement comprises extending phase (ii).

USE - AX is a carotenoid pigment responsible for the colour of certain food prods., partic. salmon, sea bream, trout, shrimp, lobster, and other crustaceans, which plays a critical nutritional role in their life. A distinct red colour also improves consumer acceptance of certain food prods., e.g. flesh, poultry, eggs and dairy prods., or snack foods. - The AX need not be isolated as such; the yeast prod. can be made into a cream, dried, and formulated for aquaculture of salmonids, crustaceans, or bream; the cells need not be broken, as unbroken cells, as from spray or drum drying mfr., provide AX almost as efficiently as cells broken by milling or enzymic treatments. The **feed** contains 0.1-10, pref 1-3% of

the dried prod.

ADVANTAGE - The AX prodn. of the new PR strains, and the improved prodn. method, provide an economically viable AX prodn. **process**, competitive with synthetic AX. Targets of even 4000 ppm AX are possible in the culture.

Member(0009)

ABEQ US 5922560 A UPAB 20050824

A strain of *Phaffia rhodozyma* (PR), which produces  $\geq 3000$  ppm **astaxanthin** (ZX) based on dry yeast solids, when cultivated in  $\geq 1500$  l of nutrient medium contg. more than 4 wt.% yeast solids, is new.

Also new is an improved fermentation method for prodn. of AX from a PR strain, comprising cultivating the PR cells in nutrient medium contg. a rapidly metabolised energy source, maintained over at least part of the cultivation such that the PR experiences: (i) a growth phase, during which the PR cells increase rapidly and produce AX, and in which the energy source is fed in at a rate such that it does not accumulate in the medium in excess of a predetermined level; followed by (ii) a maturation phase, during which the increase in cell nos. slows but AX prodn. continues at a rate at least as high as during phase (i); in which the improvement comprises extending phase (ii).

USE - AX is a carotenoid pigment responsible for the colour of certain food prods., partic. salmon, sea bream, trout, shrimp, lobster, and other crustaceans, which plays a critical nutritional role in their life. A distinct red colour also improves consumer acceptance of certain food prods., e.g. flesh, poultry, eggs and dairy prods., or snack foods. - The AX need not be isolated as such; the yeast prod. can be made into a cream, dried, and formulated for aquaculture of salmonids, crustaceans, or bream; the cells need not be broken, as unbroken cells, as from spray or drum drying mfr., provide AX almost as efficiently as cells broken by milling or enzymic treatments. The **feed** contains 0.1-10, pref 1-3% of the dried prod.

ADVANTAGE - The AX prodn. of the new PR strains, and the improved prodn. method, provide an economically viable AX prodn. **process**, competitive with synthetic AX. Targets of even 4000 ppm AX are possible in the culture.

Member(0010)

ABEQ US 6015684 A UPAB 20050824

A strain of *Phaffia rhodozyma* (PR), which produces  $\geq 3000$  ppm **astaxanthin** (ZX) based on dry yeast solids, when cultivated in  $\geq 1500$  l of nutrient medium contg. more than 4 wt.% yeast solids, is new.

Also new is an improved fermentation method for prodn. of AX from a PR strain, comprising cultivating the PR cells in nutrient medium contg. a rapidly metabolised energy source, maintained over at least part of the cultivation such that the PR experiences: (i) a growth phase, during which the PR cells increase rapidly and produce AX, and in which the energy source is fed in at a rate such that it does not accumulate in the medium in excess of a predetermined level; followed by (ii) a maturation phase, during which the increase in cell nos. slows but AX prodn. continues at a rate at least as high as during phase (i); in which the improvement comprises extending phase (ii).

USE - AX is a carotenoid pigment responsible for the colour of certain food prods., partic. salmon, sea bream, trout, shrimp, lobster, and other crustaceans, which plays a critical nutritional role in their life. A distinct red colour also improves consumer acceptance of certain food prods., e.g. flesh, poultry, eggs and dairy prods., or snack foods. -



The AX need not be isolated as such; the yeast prod. can be made into a cream, dried, and formulated for aquaculture of salmonids, crustaceans, or bream; the cells need not broken, as unbroken cells, as from spray or drum drying mfr., provide AX almost as efficiently as cells broken by milling or enzymic treatments. The **feed** contains 0.1-10, pref 1-3% of the dried prod.

ADVANTAGE - The AX prodn. of the new PR strains, and the improved prodn. method, provide an economically viable AX prodn. **process**, competitive with synthetic AX. Targets of even 4000 ppm AX are possible in the culture.

L87 ANSWER 61 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 1994-333215 [41] WPIX  
 DOC. NO. CPI: C1994-151647 [41]  
 TITLE: Recovering carotenoid from micro-algae - including osmotic shock step to increase yield especially for extraction of **astaxanthin** from Haematococcus pluvialis.  
 DERWENT CLASS: B05; C03; D13; D16; E24  
 INVENTOR: GUDIN C; MAILLARD P; TREZZY C  
 PATENT ASSIGNEE: (HELI-N) HELIOSYNTHESE; (HELI-N) HELIOSYNTHESE SA; (THAL-N) THALLIA PHARM SA  
 COUNTRY COUNT: 21

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 9423057	A1	19941013	(199441)*	FR	19[1]	
FR 2703692	A1	19941014	(199441)	FR		
AU 9465405	A	19941024	(199505)	EN		
ZA 9402351	A	19941228	(199507)	EN	12	
EP 693133	A1	19960124	(199609)	FR	[0]	
EP 693133	B1	19980121	(199808)	FR	6[1]	
DE 69408129	E	19980226	(199814)	DE		
ES 2115229	T3	19980616	(199830)	ES		
AU 695047	B	19980806	(199843)	EN		
IL 109202	A	19981227	(199907)	EN		

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 9423057	A1	WO 1994-FR383	19940406
FR 2703692	A1	FR 1993-4119	19930407
IL 109202	A	IL 1994-109202	19940403
ZA 9402351	A	ZA 1994-2351	19940405
AU 9465405	A	AU 1994-65405	19940406
AU 695047	B	AU 1994-65405	19940406
DE 69408129	E	DE 1994-69408129	19940406
EP 693133	A1	EP 1994-913140	19940406
EP 693133	B1	EP 1994-913140	19940406
DE 69408129	E	EP 1994-913140	19940406
ES 2115229	T3	EP 1994-913140	19940406
EP 693133	A1	WO 1994-FR383	19940406
EP 693133	B1	WO 1994-FR383	19940406
DE 69408129	E	WO 1994-FR383	19940406

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 695047 B	Previous Publ	AU 9465405 A
DE 69408129 E	Based on	EP 693133 A
ES 2115229 T3	Based on	EP 693133 A
AU 9465405 A	Based on	WO 9423057 A
EP 693133 A1	Based on	WO 9423057 A
EP 693133 B1	Based on	WO 9423057 A
DE 69408129 E	Based on	WO 9423057 A
AU 695047 B	Based on	WO 9423057 A

PRIORITY APPLN. INFO: **FR 1993-4119 19930407**

AN 1994-333215 [41] WPIX

AB WO 1994023057 A1 UPAB: 20050701

Extraction of carotenoids (I) from a culture of micro-algae (MA) comprises: (a) centrifuging the culture medium to give paste rich in MA; (b) diluting paste in saline solution to subject MA cells to osmotic shock; (c) acidifying solution and boiling to soften cell walls; (d) filtering to separate acidified cells from solution and (e) working cells with organic solvent which dissolves (I) contained in the cells. Saline solution is NaCl solution especially of concentration 50-300 g/l. Solution is acidified to pH 2-4. Boiling is effected for 10-60 mins. Extraction solvent is acetone or CH<sub>2</sub>Cl<sub>2</sub>. Obtd. organic sorbent extract containing (I) is subjected to a concentration stage.

USE/ADVANTAGE - **Process** is especially used (claimed) for extracting **astaxanthin** (Ia) and its esters from culture of *Haematococcus pluvialis*. (I) especially (Ia), are natural colourants used in **animal feed** (especially in **feeds** for fish and crustaceans) and in pharmacology. (Ia) ensures pink colouration of the flesh of shrimps, trout, salmon etc. (I) are obtd. in high yields, i.e. at least 4 times higher than those of prior art methods. Osmotic shock breaks up the endoplasmic network of MA to release (I), without damaging (I) (which are highly unstable and sensitive to photo-oxidation in pure form).

Member(0001)

ABEQ FR 2703692 A1 UPAB 20050701

Extn. of carotenoids (I) from a culture of micro-algae (MA) comprises: (a) centrifuging the culture medium to give paste rich in MA; (b) diluting paste in saline soln. to subject MA cells to osmotic shock; (c) acidifying soln. and boiling to soften cell walls; (d) filtering to separate acidified cells from soln. and (e) working cells with organic solvent which dissolves (I) contained in the cells.

Saline soln. is NaCl soln. esp. of concn. 50-300 g/l. Soln. is acidified to pH 2-4. Boiling is effected for 10-60 mins. Extn. solvent is acetone or CH<sub>2</sub>Cl<sub>2</sub>. Obtd. organic sorbent extract contg. (I) is subjected to a concn. stage.

USE/ADVANTAGE - **Process** is esp. used (claimed) for extracting **astaxanthin** (Ia) and its esters from culture of *Haematococcus pluvialis*. (I) esp. (Ia), are natural colourants used in **animal feed** (esp. in **feeds** for fish and crustaceans) and in pharmacology. (Ia) ensures pink colouration of the flesh of shrimps, trout, salmon etc. (I) are obtd. in high yields, i.e. at least 4 times higher than those of prior art methods. Osmotic shock breaks up the endoplasmic network of MA to release (I), without damaging (I) (which are highly unstable and sensitive to photo-oxidation in pure form).

Member(0004)

ABEQ ZA 9402351 A UPAB 20050701

Extn. of carotenoids (I) from a culture of micro-algae (MA) comprises: (a) centrifuging the culture medium to give paste rich in MA; (b) diluting paste in saline soln. to subject MA cells to osmotic shock; (c) acidifying

soln. and boiling to soften cell walls; (d) filtering to separate acidified cells from soln. and (e) working cells with organic solvent which dissolves (I) contained in the cells.

Saline soln. is NaCl soln. esp. of concn. 50-300 g/l. Soln. is acidified to pH 2-4. Boiling is effected for 10-60 mins. Extn. solvent is acetone or CH<sub>2</sub>Cl<sub>2</sub>. Obtd. organic sorbent extract contg. (I) is subjected to a concn. stage.

USE/ADVANTAGE - **Process** is esp. used (claimed) for extracting **astaxanthin** (Ia) and its esters from culture of *Haematococcus pluvialis*. (I) esp. (Ia), are natural colourants used in **animal feed** (esp. in **feeds** for fish and crustaceans) and in pharmacology. (Ia) ensures pink colouration of the flesh of shrimps, trout, salmon etc. (I) are obtd. in high yields, i.e. at least 4 times higher than those of prior art methods. Osmotic shock breaks up the endoplasmic network of MA to release (I), without damaging (I) (which are highly unstable and sensitive to photo-oxidation in pure form).

Member(0006)

ABEQ EP 693133 B1 UPAB 20050701

Extn. of carotenoids (I) from a culture of micro-algae (MA) comprises: (a) centrifuging the culture medium to give paste rich in MA; (b) diluting paste in saline soln. to subject MA cells to osmotic shock; (c) acidifying soln. and boiling to soften cell walls; (d) filtering to separate acidified cells from soln. and (e) working cells with organic solvent which dissolves (I) contained in the cells.

Saline soln. is NaCl soln. esp. of concn. 50-300 g/l. Soln. is acidified to pH 2-4. Boiling is effected for 10-60 mins. Extn. solvent is acetone or CH<sub>2</sub>Cl<sub>2</sub>. Obtd. organic sorbent extract contg. (I) is subjected to a concn. stage.

USE/ADVANTAGE - **Process** is esp. used (claimed) for extracting **astaxanthin** (Ia) and its esters from culture of *Haematococcus pluvialis*. (I) esp. (Ia), are natural colourants used in **animal feed** (esp. in **feeds** for fish and crustaceans) and in pharmacology. (Ia) ensures pink colouration of the flesh of shrimps, trout, salmon etc. (I) are obtd. in high yields, i.e. at least 4 times higher than those of prior art methods. Osmotic shock breaks up the endoplasmic network of MA to release (I), without damaging (I) (which are highly unstable and sensitive to photo-oxidation in pure form).

L87 ANSWER 62 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 1994-304228 [38] WPIX  
 DOC. NO. CPI: C1994-138700 [38]  
 TITLE: **Preparation** of spherules containing vitamin(s),  
 medicines etc. - by controlling division of an emulsion  
 in a water immiscible solvent  
 DERWENT CLASS: A96; A97; B07; D13; D16; E19; P33  
 INVENTOR: DOLLAT J; DOLLAT J M; MOLIN M; THEALLIER P  
 PATENT ASSIGNEE: (RHON-C) RHONE-POULENC NUTRITION ANIMALE; (RHON-C)  
 RHONE-POULENC NUTRITION ANIMALE  
 COUNTRY COUNT: 19

PATENT INFO ABBR.:

PATENT NO	KIND DATE	WEEK	LA	PG	MAIN IPC
EP 618001	A1 19941005	(199438)*	FR	9[3]	
FR 2703263	A1 19941007	(199440)	FR		
CA 2120290	A 19941001	(199445)	FR		
JP 07000489	A 19950106	(199511)	JA	7[3]	
US 5500415	A 19960319	(199617)	EN	9[5]	

JP 2515487	B2 19960710 (199632)	JA 6[0]
EP 618001	B1 19970813 (199737)	FR 10[3]
DE 69404885	E 19970918 (199743)	DE
ES 2105544	T3 19971016 (199748)	ES
CA 2120290	C 19990420 (199934)	FR
RU 2145211	C1 20000210 (200048)	RU

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 618001 A1		<b>EP 1994-400650</b>	<b>19940328</b>
FR 2703263 A1		<b>FR 1993-3728</b>	<b>19930331</b>
DE 69404885 E		<b>DE 1994-69404885</b>	<b>19940328</b>
EP 618001 B1		<b>EP 1994-400650</b>	<b>19940328</b>
DE 69404885 E		<b>EP 1994-400650</b>	<b>19940328</b>
ES 2105544 T3		<b>EP 1994-400650</b>	<b>19940328</b>
CA 2120290 A		<b>CA 1994-2120290</b>	<b>19940330</b>
CA 2120290 C		<b>CA 1994-2120290</b>	<b>19940330</b>
JP 07000489 A		<b>JP 1994-82737</b>	<b>19940330</b>
JP 2515487 B2		<b>JP 1994-82737</b>	<b>19940330</b>
RU 2145211 C1		<b>RU 1994-10892</b>	<b>19940330</b>
US 5500415 A		<b>US 1994-220358</b>	<b>19940331</b>

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
DE 69404885 E	Based on	EP 618001 A
ES 2105544 T3	Based on	EP 618001 A
JP 2515487 B2	Previous Publ	JP 07000489 A

PRIORITY APPLN. INFO: **FR 1993-3728 19930331**

AN 1994-304228 [38] WPIX

AB EP 618001 A1 UPAB: 20060109

Spherules containing one or more nutritional or medical ingredients (I) are **prepared** by: (a) forming, by controlled division, spherules containing a prim. oil-in-water emulsion of the active ingredients (I), an oil (II), a protein (III) and water in a water-immiscible solvent (IV), the (b) separating the spherules so formed.

The active ingredients may be vitamins (A, E, B12, H, D3, PP, K3, B1, B2, B3, B5, B6), carotenoids ( $\beta$  carotene, **astaxanthin**, canthaxanthine), or enzymes ( $\beta$  glucanase, xylanase).

USE - The prods. may be used as **animal feed** additives.

ADVANTAGE - The **process** is simpler to carry out than known methods, can be carried out continuously, and does not involve heating to a temperature that degrades the active ingredients.

Member(0006)

ABEQ JP 2515487 B2 UPAB 20060109

Spherules contg. one or more nutritional or medical ingredients (I) are **prepd.** by: (a) forming, by controlled division, spherules contg. a prim. oil-in-water emulsion of the active ingredients (I), an oil (II), a protein (III) and water in a water-immiscible solvent (IV), the (b) sepg. the spherules so formed.

The active ingredients may be vitamins (A, E, B12, H, D3, PP, K3, B1, B2, B3, B5, B6), carotenoids ( $\beta$  carotene, **astaxanthin**, canthaxanthine), or enzymes ( $\beta$  glucanase, xylanase).

USE - The prods. may be used as **animal feed** additives.

ADVANTAGE - The **process** is simpler to carry out than known methods, can be carried out continuously, and does not involve heating to a temp. that degrades the active ingredients.

Member(0011)

ABEQ RU 2145211 C1 UPAB 20060109

Spherules contg. one or more nutritional or medical ingredients (I) are **prepd.** by: (a) forming, by controlled division, spherules contg. a prim. oil-in-water emulsion of the active ingredients (I), an oil (II), a protein (III) and water in a water-immiscible solvent (IV), the (b) sepg. the spherules so formed.

The active ingredients may be vitamins (A, E, B12, H, D3, PP, K3, B1, B2, B3, B5, B6), carotenoids ( $\beta$  carotene, **astaxanthin**, canthaxanthine), or enzymes ( $\beta$  glucanase, xylanase).

USE - The prods. may be used as **animal feed** additives.

ADVANTAGE - The **process** is simpler to carry out than known methods, can be carried out continuously, and does not involve heating to a temp. that degrades the active ingredients.

L87 ANSWER 63 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 1991-126194 [18] WPIX  
 DOC. NO. CPI: C1991-054311 [21]  
 TITLE: Dry solid compsn. containing lipid of high free fatty acid content - with caseinate to prevent loss of oil, especially useful in fish **feeding** formulations  
 DERWENT CLASS: D13  
 INVENTOR: FREEMAN C P; JARVIS R M; WILDING P  
 PATENT ASSIGNEE: (UNIL-C) UNILEVER NV  
 COUNTRY COUNT: 14

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
EP 424578	A	19910502	(199118)*	EN		
WO 9105480	A	19910502	(199120)#	EN		
CA 2002061	A	19910502	(199128)#	EN		
NO 9102445	A	19910621	(199143)#	NO		
JP 04502404	W	19920507	(199225)#	JA	4	

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 424578 A		<b>EP 1989-310874</b>	<b>19891023</b>
JP 04502404 W		<b>JP 1989-511517</b>	<b>19891023</b>
WO 9105480 A		<b>WO 1989-GB1267</b>	<b>19891023</b>
JP 04502404 W		<b>WO 1989-GB1267</b>	<b>19891023</b>
CA 2002061 A		<b>CA 1989-2002061</b>	<b>19891102</b>
NO 9102445 A		<b>NO 1991-2445</b>	<b>19910621</b>

FILING DETAILS:

PATENT NO	KIND	PATENT NO
JP 04502404 W	Based on	WO 9105480 A

PRIORITY APPLN. INFO: **EP 1989-310874 19891023**  
**WO 1980-GB1267 19801023**  
**JP 1989-511517 19891023**

AN 1991-126194 [18] WPIX

AB EP 424578 A UPAB: 20050501

Dry solid proteinaceous compsn. contains lipid at 70-95 weight% of the compsn. and as protein component caseinate (I). The lipid contains 10-50 weight% free fatty acids (FFA). Also new are **animal feedstuffs** containing this compsn. plus other nutrient materials. Pref. the compsn. contains at least 80 weight% lipid, of FFA content at least 20 (especially about 40) weight%, and (I) is partic. Na caseinate. The lipid is especially fish oil and the compsn. may also contain additional lipid-soluble **feedstuffs**, e.g. a vitamin or carotenoid pigment (especially **astaxanthin**).

USE/ADVANTAGE - The compsns. are especially used for **feeding** fish, partic. salmonids, usually when blended with fish meal and cereals and formulated as extrudates. The compsn. is in the form of free-flowing particles, so is easily **processed** and contains more lipid than known prods. The caseinate protects the lipid against leakage more effectively than other proteins, and also provides significant protection against oxidation to the unsatd. components. @ (6pp Dwg.No.0/1)

Member(0005)

ABEQ JP 04502404 W UPAB 20050501

Dry solid proteinaceous compsn. contains lipid at 70-95 wt.% of the compsn. and as protein component caseinate (I). The lipid contains 10-50 wt.% free fatty acids (FFA). Also new are **animal feedstuffs** contg. this compsns. plus other nutrient materials.

USE/ADVANTAGE - Esp. used for feeding fish, partic. **salmonids**, usually when blended with fish meal and cereals and formulated as extrudates. The compsn. is in the form of free-flowing particles, so is easily processed and contains **more** lipid than known prods.. The caseinate protects the lipid against leakage more effectively than other proteins and also provides protection against oxidn. to the unsatd. components.

L87 ANSWER 64 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 1989-248848 [34] WPIX  
 DOC. NO. CPI: C1989-110893 [21]  
 TITLE: Pigmentation supplement comprising comminuted Haematococcus algae - used in e.g. fish **feed** to ensure natural colouration  
 DERWENT CLASS: C03; D13; P13  
 INVENTOR: SPENCER G K; SPENCER K G  
 PATENT ASSIGNEE: (MICR-N) MICROBIO RESOURCES; (MICR-N) MICROBIO RESOURCES INC  
 COUNTRY COUNT: 18

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 8906910	A	19890810	(198934)*	EN	20[1]	
PT 89656	A	19891004	(198945)	PT		
AU 8931823	A	19890825	(198947)	EN		
US 4871551	A	19891003	(198949)	EN	7	
NO 8903927	A	19891120	(199001)	NO		
FI 8904718	A	19891005	(199002)	FI		
DK 8904939	A	19891006	(199008)	DA		
EP 356499	A	19900307	(199010)	EN		

ES 2012633	A	19900401 (199019)	ES
JP 02503632	W	19901101 (199050)	JA
EP 356499	B1	19930331 (199313)	EN 11[1]
DE 68905717	E	19930506 (199319)	DE
NO 174274	B	19940103 (199406)	NO
CA 1333345	C	19941206 (199504)	EN
EP 356499	A4	19900905 (199512)	EN

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 8906910	A	WO 1989-US220	19890120
US 4871551	A	US 1988-153308	19880208
EP 356499	A4	EP 1989-902666	
DE 68905717	E	DE 1989-68905717	19890120
EP 356499	A	EP 1989-902666	19890120
EP 356499	B1	EP 1989-902666	19890120
DE 68905717	E	EP 1989-902666	19890120
JP 02503632	W	JP 1989-502478	19890120
EP 356499	B1	WO 1989-US220	19890120
DE 68905717	E	WO 1989-US220	19890120
NO 174274	B	WO 1989-US220	19890120
CA 1333345	C	CA 1989-589743	19890201
ES 2012633	A	ES 1989-426	19890207
NO 174274	B	NO 1989-3927	19891003

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
DE 68905717	E	Based on EP 356499 A
NO 174274	B	Previous Publ NO 8903927 A
EP 356499	B1	Based on WO 8906910 A
DE 68905717	E	Based on WO 8906910 A

## PRIORITY APPLN. INFO: US 1988-153308 19880208

AN 1989-248848 [34] WPIX

AB WO 1989006910 A UPAB: 20060106

Pigmentation supplement compsn. comprises comminuted Haematococcus alga having an ave. particle size below 10 microns, having been comminuted while in the dried encysted state. **Preparation** of a carotenoid compsn. comprises drilling dried encysted Haematococcus cells to below -50 deg.C and comminuting to below 10 microns. The carotenoids then may be extracted with an organic solvent.

USE/ADVANTAGE - Useful as a **feed** supplement pigment source for e.g. salmon, trout, shrimp, lobsters, chickens, etc. The extracted carotenoids, especially **astaxanthin**, are useful in food supplements, colourants, etc. The artificial pigmentation supplement closely resembles natural food sources. Addition of a suitable antioxidant gives extended storage stability.

Member(0004)

ABEQ US 4871551 A UPAB 20060106

Pigmentation supplement compsn. comprises comminuted haematococcus alga of particle size 10 microns. Comminution takes place whilst haematococcus is in dried encysted state. Compsn. also **includes** a degradation inhibiting material.

Alga species comprises H.pluvialis, Hcapensis, H.droebakensis, H.buetschlii, or H.zinbabwiensis. Antioxidant is used to inhibit degradation, and comprises butylated hydroxytoluene, ethoxyguin,

tocopherol, butylated hydroxyanisole, di-tert. butyl p-cresol, or propyl gallate.

USE - For supplementing marine **animal feeds**.

L87 ANSWER 65 OF 71 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 ACCESSION NUMBER: 1988-307563 [43] WPIX  
 DOC. NO. CPI: C1988-136080 [21]  
 TITLE: **Astaxanthin**-producing yeast cells - used in **feeds** for fish and other animals to produce pigmentation or as colourants in foods  
 DERWENT CLASS: C03; D13; D16; E24  
 INVENTOR: CHRISTENSEN I; FLEN B; FLENO B; JOHANSEN S R; JOHNSON E A; LARSEN R  
 PATENT ASSIGNEE: (BIOC-N) BIOCLOURS IS; (DANI-N) DANISCO BIOTEKNOLOG; (STAM-C) DSM IP ASSETS BV; (STAM-C) DSM NV; (KONN-C) GIST-BROCADES BV; (KONN-C) GIST-BROCADES NV  
 COUNTRY COUNT: 17  
 PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 8808025	A	19881020	(198843)*	EN	67[0]	
AU 8816889	A	19881104	(198905)	EN		
NO 8805560	A	19890328	(198918)	NO		
FI 8904888	A	19891016	(199002)	FI		
DK 8905133	A	19891016	(199020)	DA		
EP 367765	A	19900516	(199020)	EN		
JP 02504101	W	19901129	(199103)	JA		
EP 367765	B1	19930825	(199334)	EN	39[0]	
DE 3883539	G	19930930	(199340)	DE		
DK 168542	B	19940418	(199419)	DA		
US 5356810	A	19941018	(199441)	EN	19[0]	
JP 07014340	B2	19950222	(199512)	JA	25	
CA 1334512	C	19950221	(199515)	EN		
US 5599711	A	19970204	(199711)	EN	21[0]	
US 5679567	A	19971021	(199748)	EN	18[0]	
US 5709856	A	19980120	(199810)	EN	19	
US 5712110	A	19980127	(199811)	EN	22[0]	
JP 11069969	A	19990316	(199921)	JA	26	
KR 9614619	B1	19961019	(199929)	KO		
NO 305762	B1	19990719	(199935)	NO		
US 5972642	A	19991026	(199952)	EN		
EP 367765	B2	20040428	(200429)	EN		

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 8808025 A		<b>WO 1988-DK68 19880415</b>	
DK 8905133 A		<b>DK 1987-1998 19870415</b>	
CA 1334512 C		<b>CA 1988-564310 19880415</b>	
DE 3883539 G		<b>DE 1988-3883539 19880415</b>	
EP 367765 A		<b>EP 1988-903778 19880415</b>	
EP 367765 B1		<b>EP 1988-903778 19880415</b>	
DE 3883539 G		<b>EP 1988-903778 19880415</b>	
EP 367765 B2		<b>EP 1988-903778 19880415</b>	
JP 02504101 W		<b>JP 1988-503601 19880415</b>	
JP 07014340 B2		<b>JP 1988-503601 19880415</b>	
JP 11069969 A Div Ex		<b>JP 1988-503601 19880415</b>	



EP 367765 B1	WO 1988-DK68 19880415
DE 3883539 G	WO 1988-DK68 19880415
DK 168542 B	WO 1988-DK68 19880415
JP 07014340 B2	WO 1988-DK68 19880415
US 5709856 A Cont of	WO 1988-DK68 19880415
KR 9614619 B1	WO 1988-DK68 19880415
NO 305762 B1	WO 1988-DK68 19880415
US 5972642 A Cont of	WO 1988-DK68 19880415
EP 367765 B2	WO 1988-DK68 19880415
KR 9614619 B1	KR 1988-701657 19881214
NO 305762 B1	NO 1988-5560 19881214
DK 8905133 A	DK 1989-5133 19891016
DK 168542 B	DK 1989-5133 19891016
US 5356810 A Cont of	US 1989-424306 19891112
US 5599711 A Cont of	US 1989-424306 19891112
US 5679567 A Cont of	US 1989-424306 19891112
US 5709856 A Cont of	US 1989-424306 19891112
US 5712110 A Cont of	US 1989-424306 19891112
US 5972642 A Cont of	US 1989-424306 19891211
US 5356810 A	US 1992-919986 19920727
US 5599711 A Cont of	US 1992-919986 19920727
US 5679567 A Div Ex	US 1992-919986 19920727
US 5709856 A Div Ex	US 1992-919986 19920727
US 5712110 A Div Ex	US 1992-919986 19920727
US 5972642 A Div Ex	US 1992-919986 19920727
US 5679567 A	US 1994-322690 19941013
US 5709856 A Div Ex	US 1994-322690 19941013
US 5712110 A Div Ex	US 1994-322690 19941013
US 5972642 A Div Ex	US 1994-322690 19941013
US 5599711 A	US 1994-322950 19941013
US 5709856 A	US 1995-478292 19950607
US 5712110 A	US 1995-484683 19950607
US 5972642 A Cont of	US 1995-484683 19950607
US 5972642 A	US 1997-989860 19971212
JP 11069969 A	JP 1998-166941 19880415

## FILING DETAILS:

PATENT NO	KIND	PATENT NO
DK 168542 B	Previous Publ	DK 8905133 A
DE 3883539 G	Based on	EP 367765 A
JP 07014340 B2	Based on	JP 02504101 A
NO 305762 B1	Previous Publ	NO 8805560 A
US 5599711 A	Cont of	US 5356810 A
US 5679567 A	Div ex	US 5356810 A
US 5709856 A	Div ex	US 5356810 A
US 5712110 A	Div ex	US 5356810 A
US 5972642 A	Div ex	US 5356810 A
US 5972642 A	Div ex	US 5679567 A
US 5972642 A	Cont of	US 5712110 A
EP 367765 B1	Based on	WO 8808025 A
DE 3883539 G	Based on	WO 8808025 A
JP 07014340 B2	Based on	WO 8808025 A
EP 367765 B2	Based on	WO 8808025 A

PRIORITY APPLN. INFO: DK 1987-1998 19870415  
 WO 1988-DK68 19880415

AN 1988-307563 [43] WPIX  
 AB WO 1988008025 A UPAB: 20050429

A yeast cell is claimed which, when grown under conditions of an oxygen transfer rate of at least 30 mmol/L/hr on Difco (RTM) YM medium at 20-22 deg.C for 5 days in 500 ml shake flasks with 2 baffles containing 50 ml of the medium and subjected to orbital shaking at 150 rpm, the inoculum being 100 microlitres of a 4 day old YM culture, it produces astaxanthin (AX) in an amount of at least 300 microgram per g of yeast dry matter. This is determined by HPLC analysis using pure AX as a standard on a methanol extract of the yeast **prepared** by subjecting a suspension of 0.2g of yeast dry matter in 20ml of methanol to 5x1 mins. of disintegration at intervals of 0.5 min. The disintegration is performed at a temperature of at most 20 deg.C in a glass ball mill containing 15g of glass balls having a dia. of 0.4 mm, the glass ball mill being provided with a cooling jacket with ice water. The yeast cell may belong to the genus *Phaffia* and pref. to the species *Phaffia rhodozyma*.

USE/ADVANTAGE - The yeast cells contain AX in sufficiently high concns. to make it possible to use the yeast cells as or in **feed** for fish and other animals in which a pigmentation of the animal meat or a prod. of the animal is desired. The AX may be extracted from the yeast cells and used as colourants in foods such as e.g. edible oils, pates, ice cream and beverages.

Member(0011)

ABEQ US 5356810 A UPAB 20050429

Isolated pure culture of a strain of *Phaffia rhodozyma* (I), of accession No. 224-87 CBS, or 225-87 CBS, or 215-88 CBS, is claimed. The cultures, when grown under an O<sub>2</sub>-transfer rate of at least 30 mmol/L/hr. on YM medium at 20-22 deg.C for 5 days in 500 ml shake flasks with 2 baffles, contg. 50 ml of medium and subjected to orbital shaking at 150 rpm, produce astaxanthin (II) in amt. of at least 600 micro-g. (per 1g dry wt. of (I)) determined by HPLC.

Mutants of (I) retaining the ability to produce (II), are also claimed.

USE - (II) is added to **feed** to produce red pigmentation, e.g. in salmon or trout, or to colour egg-yolks, or other food.

Member(0012)

ABEQ JP 95014340 B2 UPAB 20050429

Yeast cell is claimed which, when grown under conditions of an oxygen transfer rate of at least 30 mmol/L/hr on Difco (RTM) YM medium at 20-22 deg.C for 5 days in 500 ml shake flasks with 2 baffles contg. 50 ml of the medium and subjected to orbital shaking at 150 rpm, the inoculum being 100 microlitres of a 4 day old YM culture, it produces astaxanthin (AX) in an amt. of at least 300 microgram per g of yeast dry matter. This is determined by HPLC analysis using pure AX as a standard on a methanol extract of the yeast **prepd.** by subjecting a suspension of 0.2 g of yeast dry matter in 20 ml of methanol to 5 x 1 minute of disintegration at intervals of 0.5 minutes. The disintegration is performed at a temp. of at most 20 deg.C in a glass ball mill contg. 15 g of glass balls having a dia. of 0.4 mm, the glass ball mill being provided with a cooling jacket with ice water.

The yeast cell may belong to the genus *Phaffia* and pref. to the species *Phaffia rhodozyma*.

USE/ADVANTAGE - The yeast cells contain AX in sufficiently high concns. to make it possible to use the yeast cells as or in **feed** for fish and other animals in which a pigmentation of the animal meat or a prod. of the animal is desired. The AX may be extracted from the yeast cells and used as colourants in food such as e.g. edible oils, pates, ice cream and beverages.

Member(0016)

ABEQ US 5709856 A UPAB 20050429

A yeast cell is claimed which, when grown under conditions of an oxygen transfer rate of at least 30 mmol/L/hr on Difco (RTM) YM medium at 20-22 deg.C for 5 days in 500 ml shake flasks with 2 baffles contg. 50 ml of the medium and subjected to orbital shaking at 150 rpm, the inoculum being 100 microlitres of a 4 day old YM culture, it produces astraxanthin (AX) in an amt. of at least 300 microgram per g of yeast dry matter. This is determined by HPLC analysis using pure AX as a standard on a methanol extract of the yeast **prepd.** by subjecting a suspension of 0.2g of yeast dry matter in 20ml of methanol to 5x1 mins. of disintegration at intervals of 0.5 min. The disintegration is performed at a temp. of at most 20 deg.C in a glass ball mill contg. 15g of glass balls having a dia. of 0.4 mm, the glass ball mill being provided with a cooling jacket with ice water.

The yeast cell may belong to the genus *Phaffia* and pref. to the species *Phaffia rhodozyma*.

USE/ADVANTAGE - The yeast cells contain AX in sufficiently high concns. to make it possible to use the yeast cells as or in **feed** for fish and other animals in which a pigmentation of the animal meat or a prod. of the animal is desired. The AX may be extd. from the yeast cells and used as colourants in foods such as e.g. edible oils, pates, ice cream and beverages.

Member(0017)

ABEQ US 5712110 A UPAB 20050429

A yeast cell is claimed which, when grown under conditions of an oxygen transfer rate of at least 30 mmol/L/hr on Difco (RTM) YM medium at 20-22 deg.C for 5 days in 500 ml shake flasks with 2 baffles contg. 50 ml of the medium and subjected to orbital shaking at 150 rpm, the inoculum being 100 microlitres of a 4 day old YM culture, it produces astraxanthin (AX) in an amt. of at least 300 microgram per g of yeast dry matter. This is determined by HPLC analysis using pure AX as a standard on a methanol extract of the yeast **prepd.** by subjecting a suspension of 0.2g of yeast dry matter in 20ml of methanol to 5x1 mins. of disintegration at intervals of 0.5 min. The disintegration is performed at a temp. of at most 20 deg.C in a glass ball mill contg. 15g of glass balls having a dia. of 0.4 mm, the glass ball mill being provided with a cooling jacket with ice water.

The yeast cell may belong to the genus *Phaffia* and pref. to the species *Phaffia rhodozyma*.

USE/ADVANTAGE - The yeast cells contain AX in sufficiently high concns. to make it possible to use the yeast cells as or in **feed** for fish and other animals in which a pigmentation of the animal meat or a prod. of the animal is desired. The AX may be extd. from the yeast cells and used as colourants in foods such as e.g. edible oils, pates, ice cream and beverages.

Member(0018)

ABEQ JP 11069969 A UPAB 20050429

A yeast cell is claimed which, when grown under conditions of an oxygen transfer rate of at least 30 mmol/L/hr on Difco (RTM) YM medium at 20-22 deg.C for 5 days in 500 ml shake flasks with 2 baffles contg. 50 ml of the medium and subjected to orbital shaking at 150 rpm, the inoculum being 100 microlitres of a 4 day old YM culture, it produces astraxanthin (AX) in an amt. of at least 300 microgram per g of yeast dry matter. This is determined by HPLC analysis using pure AX as a standard on a methanol extract of the yeast **prepd.** by subjecting a suspension of 0.2g of yeast dry matter in 20ml of methanol to 5x1 mins. of disintegration at intervals of 0.5 min. The disintegration is performed at a temp. of at most 20 deg.C in a glass ball mill contg. 15g of glass balls having a dia. of 0.4 mm, the glass ball mill being provided with a cooling jacket with

ice water.

The yeast cell may belong to the genus *Phaffia* and pref. to the species *Phaffia rhodozyma*.

USE/ADVANTAGE - The yeast cells contain AX in sufficiently high concns. to make it possible to use the yeast cells as or in **feed** for fish and other animals in which a pigmentation of the animal meat or a prod. of the animal is desired. The AX may be extd. from the yeast cells and used as colourants in foods such as e.g. edible oils, pates, ice cream and beverages.

Member(0021)

ABEQ US 5972642 A UPAB 20050429

A yeast cell is claimed which, when grown under conditions of an oxygen transfer rate of at least 30 mmol/l/hr on Difco (RTM) YM medium at 20-22 deg.C for 5 days in 500 ml shake flasks with 2 baffles contg. 50 ml of the medium and subjected to orbital shaking at 150 rpm, the inoculum being 100 microlitres of a 4 day old YM culture, it produces astaxanthin (AX) in an amt. of at least 300 microgram per g of yeast dry matter. This is determined by HPLC analysis using pure AX as a standard on a methanol extract of the yeast **prepd.** by subjecting a suspension of 0.2g of yeast dry matter in 20ml of methanol to 5x1 mins. of disintegration at intervals of 0.5 min. The disintegration is performed at a temp. of at most 20 deg.C in a glass ball mill contg. 15g of glass balls having a dia. of 0.4 mm, the glass ball mill being provided with a cooling jacket with ice water.

The yeast cell may belong to the genus *Phaffia* and pref. to the species *Phaffia rhodozyma*.

USE/ADVANTAGE - The yeast cells contain AX in sufficiently high concns. to make it possible to use the yeast cells as or in **feed** for fish and other animals in which a pigmentation of the animal meat or a prod. of the animal is desired. The AX may be extd. from the yeast cells and used as colourants in foods such as e.g. edible oils, pates, ice cream and beverages.

L87 ANSWER 66 OF 71 FROSTI COPYRIGHT 2007 LFRA on STN

ACCESSION NUMBER: 556311 FROSTI Full-text

TITLE: Conversion of xanthophylls in plant material for use as a food colorant.

INVENTOR: Sas B.; Adams C.

PATENT ASSIGNEE: Kemin Industries Inc.

SOURCE: United States Patent

PATENT INFORMATION: US 6221417 B 20010424  
WO 2000007458

APPLICATION INFORMATION: **19981117**

NOTE: 20010424

DOCUMENT TYPE: Patent

LANGUAGE: English

SUMMARY LANGUAGE: English

AB A method for the conversion of non-free xanthophylls in plant material into the free compounds in situ is described. The xanthophylls (hydroxylated carotenoids, and therefore natural colouring compounds) may be liberated by transesterification of acyl-xanthophylls. Xanthophylls include lutein, zeaxanthin, capsorubin, **astaxanthin** and canthaxanthin, which may be of use in the **animal feed**, food and pharmaceutical industries in the free form. The invention also features a marigold meal with a high free lutein content that may be used as a **feed** additive to enhance the colouring of egg yolk.

L87 ANSWER 67 OF 71 FROSTI COPYRIGHT 2007 LFRA on STN

ACCESSION NUMBER: 598559 FROSTI Full-text

TITLE: **Process** for the **preparation** of an xanthophyll.  
 INVENTOR: Quesnel Y.; Flacher R.  
 PATENT ASSIGNEE: Aventis Animal Nutrition SA  
 SOURCE: European Patent Application  
 PATENT INFORMATION: EP 1253131 A1  
 APPLICATION INFORMATION: **20010424**  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 SUMMARY LANGUAGE: English

AB A simple and low-cost method of producing the carotenoid called xanthophyll by oxidizing a carotene with hydrogen peroxide and an iodine-containing compound is described. The method particularly yields canthaxanthin and **astaxanthin** by respectively oxidizing beta-carotene, and lutein or zeaxanthin with an iodine-containing compound. The xanthophylls are suitable as colouring agents in foods and **animal feed** additives. Prior arts use oxidizing reagents in excess and which are expensive and toxic. The invention also yields commercial amounts of xanthophylls at shorter periods than prior art. The invention allows use of existing analytical techniques to monitor the progress of the **preparation** as well as conventional methods of isolating the xanthophylls.

L87 ANSWER 68 OF 71 FROSTI COPYRIGHT 2007 LFRA on STN

ACCESSION NUMBER: 557727 FROSTI Full-text  
 TITLE: Method for the conversion of xanthophylls in plant material.  
 INVENTOR: Sas B.; Adams C.  
 PATENT ASSIGNEE: Kemin Industries Inc.  
 SOURCE: European Patent Application  
 PATENT INFORMATION: EP 1102545 A1  
 WO 2000007458 20000217  
 APPLICATION INFORMATION: **19980805**  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 SUMMARY LANGUAGE: English

AB A method for the conversion of non-free xanthophylls in plant material into the free compounds in situ is described. The xanthophylls (hydroxylated carotenoids, and therefore natural colouring compounds) may be liberated by transesterification of acyl-xanthophylls. Xanthophylls include lutein, zeaxanthin, capsorubin, **astaxanthin** and canthaxanthin, which may be of use in the **animal feed**, food and pharmaceutical industries in the free form. The invention also features a marigold meal with a high free lutein content that may be used as a **feed** additive to enhance the colouring of egg yolk.

L87 ANSWER 69 OF 71 FROSTI COPYRIGHT 2007 LFRA on STN

ACCESSION NUMBER: 413790 FROSTI Full-text  
 TITLE: **Process** for extraction of carotenoids from bacterial cells.  
 INVENTOR: Kitaoka M.; Tsubokura A.; Kiyota T.  
 PATENT ASSIGNEE: Nippon Oil Co. Ltd  
 SOURCE: European Patent Application  
 PATENT INFORMATION: EP 719866 A1  
 DESIGNATED STATES: CH; DE; FR; GB; LI  
 APPLICATION INFORMATION: **19950926**  
 PRIORITY INFORMATION: Japan **19941227**  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 SUMMARY LANGUAGE: English

AB A **process** is disclosed for production of carotenoid compounds from bacterial cells. The cells are brought into contact with a supercritical fluid (preferably carbon dioxide), which is used to extract the carotenoid compound from the cells. The resulting carotenoid compounds may be used as food additives and in **animal feed** mixes. The proposed method provides a more acceptable food-grade product without residues of organic solvents. Extraction of xanthophyll compounds (e.g. **astaxanthin** and canthaxanthin) is improved, as these have low solubility in other food-safe solvents.

L87 ANSWER 70 OF 71 FROSTI COPYRIGHT 2007 LFRA on STN

ACCESSION NUMBER: 569320 FROSTI Full-text  
 TITLE: Biopolymers and production thereof with coupled product recovery.  
 INVENTOR: Schorken U.; Weiss A.; Kuhlmann K.; Horlacher P.  
 PATENT ASSIGNEE: Cognis Deutschland GmbH  
 SOURCE: PCT Patent Application  
 PATENT INFORMATION: WO 2001072140 A2  
 APPLICATION INFORMATION: **20010316**  
 PRIORITY INFORMATION: Germany, Federal Republic of **20000325**  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 SUMMARY LANGUAGE: English; German

AB The biopolymer chitin, from which chitosan is derived, is traditionally obtained by comminuting, demineralizing, deproteinizing and washing crustacean waste, such as shrimp peelings. An environmentally friendly method of obtaining chitin using biodegradable complex formers and proteases and producing less polluted waste water is disclosed. This **process** enables separation and isolation of useful by-products - protein, **astaxanthin** and calcium, which can be used in **animal feed**.

L87 ANSWER 71 OF 71 FROSTI COPYRIGHT 2007 LFRA on STN

ACCESSION NUMBER: 522963 FROSTI Full-text  
 TITLE: Method for the conversion of xanthophylls in plant material.  
 INVENTOR: Sas B.; Adams C.  
 PATENT ASSIGNEE: Kemin Industries Inc.  
 SOURCE: PCT Patent Application  
 PATENT INFORMATION: WO 2000007458 A1  
 APPLICATION INFORMATION: **19980805**  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 SUMMARY LANGUAGE: English

AB A method for the conversion of non-free xanthophylls in plant material into the free compounds in situ is described. The xanthophylls (hydroxylated carotenoids, and therefore natural colouring compounds) may be liberated by transesterification of acyl-xanthophylls. Xanthophylls include lutein, zeaxanthin, capsorubin, **astaxanthin** and canthaxanthin, which may be of use in the **animal feed**, food and pharmaceutical industries in the free form. The invention also features a marigold meal with a high free lutein content that may be used as a **feed** additive to enhance the colouring of egg yolk.

=> d his full

(FILE 'HOME' ENTERED AT 14:15:58 ON 13 MAR 2007)

FILE 'HCAPLUS' ENTERED AT 14:16:07 ON 13 MAR 2007

E US2005-524647/APPS

L1 4 SEA ABB=ON PLU=ON US2005-524647/AP

E WO2003-EP09109/APPS

L2 12 SEA ABB=ON PLU=ON (WO2003-EP9109/AP OR WO2003-EP9109/PRN)

D SCAN L1

FILE 'REGISTRY' ENTERED AT 14:18:03 ON 13 MAR 2007

E ASTAXANTHIN/CN

L3 1 SEA ABB=ON PLU=ON ASTAXANTHIN/CN

L4 1 SEA ABB=ON PLU=ON 472-61-7

L5 1 SEA ABB=ON PLU=ON (L3 OR L4)

D BRO

L6 7 SEA ABB=ON PLU=ON 472-61-7/CRN

L7 8 SEA ABB=ON PLU=ON (L3 OR L4 OR L5 OR L6)

FILE 'HCAPLUS' ENTERED AT 14:19:03 ON 13 MAR 2007

L8 2510 SEA ABB=ON PLU=ON L7

FILE 'REGISTRY' ENTERED AT 14:19:14 ON 13 MAR 2007

E TAGETES/CN

L9 3 SEA ABB=ON PLU=ON (TAGETES/CN OR "TAGETES ERECTA, EXT."/CN  
OR "TAGETES MINUTA, EXT."/CN OR "TAGETES PATULA, EXT."/CN)

D BRO

D RN 1-3

L10 0 SEA ABB=ON PLU=ON 91770-75-1/CRN

L11 0 SEA ABB=ON PLU=ON 91722-29-1/CRN

L12 0 SEA ABB=ON PLU=ON 90131-43-4/CRN

FILE 'HCAPLUS' ENTERED AT 14:20:12 ON 13 MAR 2007

L13 0 SEA ABB=ON PLU=ON L9

E TAGETES/CT

E TAGETES/CT

E E3+ALL

L14 812 SEA ABB=ON PLU=ON TAGETES+NT/CT

E TAGETES/CT

E E4+ALL

L15 173 SEA ABB=ON PLU=ON TAGETES/CT

E TAGETES/CT

E E5+ALL

L16 1 SEA ABB=ON PLU=ON "TAGETES BIFLORA"/CT

E TAGETES/CT

E E6+ALL

L17 1 SEA ABB=ON PLU=ON "TAGETES BIPINATA"/CT

E TAGETES/CT

E E11+ALL

L18 315 SEA ABB=ON PLU=ON "TAGETES ERECTA"/CT

E TAGETES/CT

L19 1097 SEA ABB=ON PLU=ON TAGETES?

E ASTAXANTHIN/CT

E E3+ALL

L20 2506 SEA ABB=ON PLU=ON ASTAXANTHIN/CT

E ASTAXANTHIN/CT

E E5+ALL

E E2+ALL

L21 4 SEA ABB=ON PLU=ON "EUBACTERIA (L) ASTAXANTHIN-PRODUCING"+OLD/  
CTL22 2990 SEA ABB=ON PLU=ON ASTAXANTHIN? OR ASTAREAL OR BIOASTIN? OR  
NATUPINK? OR NATUROSE? OR OVOESTER? OR CAROPHYLL? OR TRANS  
ASTAXANTHIN

L23 4149 SEA ABB=ON PLU=ON (L3 OR L4 OR L5 OR L6 OR L7 OR L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15 OR L16 OR L17 OR L18 OR L19 OR L20 OR L21 OR L22)

L24 12 SEA ABB=ON PLU=ON (L1 OR L2)

L25 590916 SEA ABB=ON PLU=ON 17/SC,SX

L26 797 SEA ABB=ON PLU=ON L23 AND L25

L27 9526 SEA ABB=ON PLU=ON 17-12/SC,SX

L28 81 SEA ABB=ON PLU=ON L23 AND L27

L29 81 SEA ABB=ON PLU=ON L26 AND L27

L30 81 SEA ABB=ON PLU=ON (L28 OR L29)

L31 75 SEA ABB=ON PLU=ON L30 AND FEED?  
D KWIC  
E FEED/CT

L32 81 SEA ABB=ON PLU=ON (L30 OR L31)

L33 23 SEA ABB=ON PLU=ON L32 (L) (PREP OR PROC)/RL  
D KWIC

L34 42 SEA ABB=ON PLU=ON L32 AND (PROC? OR PREP?)

L35 52 SEA ABB=ON PLU=ON (L33 OR L34)

L36 43 SEA ABB=ON PLU=ON L35 AND (PY<2004 OR AY<2004 OR PRY<2004)

L37 41 SEA ABB=ON PLU=ON L36 AND L22  
D KWIC

L38 43 SEA ABB=ON PLU=ON (L36 OR L37)

FILE 'REGISTRY' ENTERED AT 14:27:43 ON 13 MAR 2007

L39 11 SEA ABB=ON PLU=ON (L7 OR L9)

FILE 'MEDLINE, EMBASE, BIOSIS, CAOLD, DRUGU, WPIX' ENTERED AT 14:27:58 ON 13 MAR 2007

FILE 'STNGUIDE' ENTERED AT 14:28:03 ON 13 MAR 2007

FILE 'MEDLINE, EMBASE, BIOSIS, CAOLD, DRUGU, WPIX, FROSTI, FSTA, FOMAD' ENTERED AT 14:29:05 ON 13 MAR 2007

L40 2133 SEA ABB=ON PLU=ON L39

L41 6500 SEA ABB=ON PLU=ON (L19 OR L22)

L42 6556 SEA ABB=ON PLU=ON (L40 OR L41)

L43 1017 SEA ABB=ON PLU=ON L42 AND (FEED?)

L44 923 SEA ABB=ON PLU=ON L43 AND L22

L45 152 SEA ABB=ON PLU=ON L44 AND (ANIMAL FEED?)  
D KWIC

L46 68 SEA ABB=ON PLU=ON L45 AND (AY<2003 OR AY<2003 OR PRY<2003)

L47 44 SEA ABB=ON PLU=ON L46 AND (PROC? OR PREP?)

L48 44 DUP REM L47 (0 DUPLICATES REMOVED)  
ANSWERS '1-38' FROM FILE WPIX  
ANSWERS '39-44' FROM FILE FROSTI

FILE 'HCAPLUS' ENTERED AT 14:32:18 ON 13 MAR 2007

L49 3 SEA ABB=ON PLU=ON L38 AND (ANIMAL FEED?)  
D KWIC L38  
D KWIC L38 5  
E ANIMAL FEED/CT  
E E3+ALL  
E E2+ALL

L50 96075 SEA ABB=ON PLU=ON FEED+OLD,NT/CT

L51 28 SEA ABB=ON PLU=ON L38 AND (L49 OR L50)

L52 28 SEA ABB=ON PLU=ON (L51 OR L49)  
E FLACHMANN R/AU

L53 29 SEA ABB=ON PLU=ON "FLACHMANN RALF"/AU  
E SAUER M/AU

L54 217 SEA ABB=ON PLU=ON ("SAUER M"/AU OR "SAUER M A"/AU OR "SAUER



M C JR"/AU OR "SAUER M C V"/AU OR "SAUER M J"/AU OR "SAUER M K"/AU OR "SAUER M M"/AU OR "SAUER M R"/AU OR "SAUER M V"/AU OR "SAUER MATT"/AU)

L55 1 SEA ABB=ON PLU=ON "SAUER MATTHEW T"/AU

L56 218 SEA ABB=ON PLU=ON (L54 OR L55)  
E SCHOPFER C/AU

L57 25 SEA ABB=ON PLU=ON ("SCHOPFER C"/AU OR "SCHOPFER C R"/AU OR "SCHOPFER CHRISTEL"/AU OR "SCHOPFER CHRISTEL R"/AU OR "SCHOPFER CHRISTEL RENATE"/AU)  
E KLEBSATTEL M/AU

L58 14 SEA ABB=ON PLU=ON "KLEBSATTEL MARTIN"/AU  
E PFEI  
E PFEIFFER A/AU

L59 157 SEA ABB=ON PLU=ON ("PFEIFFER A"/AU OR "PFEIFFER A M"/AU OR "PFEIFFER ANGELIKA"/AU OR "PFEIFFER ANGELIKA MARIA"/AU)  
E LUCK T/AU

L60 50 SEA ABB=ON PLU=ON ("LUCK T"/AU OR "LUCK T R"/AU OR "LUCK TH"/AU OR "LUCK THOMAA"/AU OR "LUCK THOMAS"/AU OR "LUCK THOMAS FREDERICK"/AU OR "LUCK THOMAS HOWARD"/AU)  
E VOESTE D/AU

L61 21 SEA ABB=ON PLU=ON ("VOESTE D"/AU OR "VOESTE DIRK"/AU)

L62 4 SEA ABB=ON PLU=ON L53 AND L56 AND L57 AND L58 AND L59 AND L60 AND L61

L63 13 SEA ABB=ON PLU=ON L53 AND (L56 OR L57 OR L58 OR L59 OR L60 OR L61)

L64 13 SEA ABB=ON PLU=ON L56 AND (L57 OR L58 OR L59 OR L60 OR L61)

L65 12 SEA ABB=ON PLU=ON L57 AND (L58 OR L59 OR L60 OR L61)

L66 4 SEA ABB=ON PLU=ON L58 AND (L59 OR L60 OR L61)

L67 4 SEA ABB=ON PLU=ON L59 AND (L60 OR L61)

L68 4 SEA ABB=ON PLU=ON L60 AND L61

L69 13 SEA ABB=ON PLU=ON (L62 OR L63 OR L64 OR L65 OR L66 OR L67 OR L68)

L70 11 SEA ABB=ON PLU=ON L69 AND L23

L71 13 SEA ABB=ON PLU=ON (L69 OR L70)

L72 12 SEA ABB=ON PLU=ON L71 AND (PY<2004 OR AY<2004 OR PRY<2004)

FILE 'HCAPLUS, MEDLINE, EMBASE, BIOSIS, WPIX' ENTERED AT 14:37:53 ON 13 MAR 2007

L73 69 SEA ABB=ON PLU=ON FLACHMANN R?/AU

L74 2275 SEA ABB=ON PLU=ON SAUER M?/AU

L75 101 SEA ABB=ON PLU=ON SCHOPFER C?/AU

L76 23 SEA ABB=ON PLU=ON KLEBSATTEL M?/AU

L77 1506 SEA ABB=ON PLU=ON PFEIFFER A?/AU

L78 112 SEA ABB=ON PLU=ON LUCK T?/AU

L79 49 SEA ABB=ON PLU=ON VOESTE D?/AU

L80 9 SEA ABB=ON PLU=ON L73 AND L74 AND L75 AND L76 AND L77 AND L78 AND L79

L81 28 SEA ABB=ON PLU=ON (L73 OR L74 OR L75 OR L76 OR L77 OR L78 OR L79) AND L22

L82 27 SEA ABB=ON PLU=ON L81 AND FEED?

L83 28 SEA ABB=ON PLU=ON (L80 OR L81 OR L82)

L84 26 SEA ABB=ON PLU=ON L83 AND (PY<2004 OR AY<2004 OR PRY<2004)

FILE 'HCAPLUS' ENTERED AT 14:41:05 ON 13 MAR 2007

L\*\*\* DEL 12 S L72

L85 11 SEA ABB=ON PLU=ON L72 NOT L52

FILE 'STNGUIDE' ENTERED AT 14:41:42 ON 13 MAR 2007

D QUE L85  
D QUE L84

L86 FILE 'HCAPLUS, BIOSIS, WPIX' ENTERED AT 14:41:58 ON 13 MAR 2007  
20 DUP REM L85 L84 (17 DUPLICATES REMOVED)  
ANSWERS '1-17' FROM FILE HCAPLUS  
ANSWERS '18-20' FROM FILE WPIX  
D IBIB ABS RETABLE L86 TOT  
D QUE L52  
D QUE L48

L87 FILE 'HCAPLUS, WPIX, FROSTI' ENTERED AT 14:42:37 ON 13 MAR 2007  
71 DUP REM L52 L48 (1 DUPLICATE REMOVED)  
ANSWERS '1-28' FROM FILE HCAPLUS  
ANSWERS '29-65' FROM FILE WPIX  
ANSWERS '66-71' FROM FILE FROSTI  
D IBIB ABS HITIND RETABLE L87 1-28  
D IBIB ABS L87 29-71

FILE HOME

FILE HCAPLUS

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FILE LAST UPDATED: 11 Mar 2007 (20070311/ED)

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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 12 MAR 2007 HIGHEST RN 926069-79-6  
DICTIONARY FILE UPDATES: 12 MAR 2007 HIGHEST RN 926069-79-6

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<http://www.cas.org/ONLINE/UG/regprops.html>

## FILE MEDLINE

FILE LAST UPDATED: 10 Mar 2007 (20070310/UP). FILE COVERS 1950 TO DATE.

All regular MEDLINE updates from November 15 to December 16 have been added to MEDLINE, along with 2007 Medical Subject Headings (MeSH(R)) and 2007 tree numbers.

The annual reload will be available in early 2007.

This file contains CAS Registry Numbers for easy and accurate substance identification.

## FILE EMBASE

FILE COVERS 1974 TO 13 Mar 2007 (20070313/ED)

EMBASE is now updated daily. SDI frequency remains weekly (default) and biweekly.

This file contains CAS Registry Numbers for easy and accurate substance identification.

## FILE BIOSIS

FILE COVERS 1969 TO DATE.

CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 7 March 2007 (20070307/ED)

## FILE CAOLD

FILE COVERS 1907-1966

FILE LAST UPDATED: 01 May 1997 (19970501/UP)

This file contains CAS Registry Numbers for easy and accurate substance identification. Title keywords, authors, patent assignees, and patent information, e.g., patent numbers, are now searchable from 1907-1966. TIFF images of CA abstracts printed between 1907-1966 are available in the PAGE display formats.

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file supports REGISTRY for direct browsing and searching of all substance data from the REGISTRY file. Enter HELP FIRST for more information.

## FILE DRUGU

FILE LAST UPDATED: 9 MAR 2007 <20070309/UP>

>>> DERWENT DRUG FILE (SUBSCRIBER) <<<

>>> FILE COVERS 1983 TO DATE <<<

>>> THESAURUS AVAILABLE IN /CT <<<

## FILE WPIX

FILE LAST UPDATED: 5 MAR 2007 <20070305/UP>

MOST RECENT THOMSON SCIENTIFIC UPDATE: 200716 <200716/DW>

DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> YOU ARE IN THE NEW AND ENHANCED DERWENT WORLD PATENTS INDEX <<<

>>> New display format FRAGHITSTR available <<<

SEE ONLINE NEWS and

[http://www.stn-international.de/archive/stn\\_online\\_news/fraghitstr\\_ex.pdf](http://www.stn-international.de/archive/stn_online_news/fraghitstr_ex.pdf)

>>> IPC Reform reclassification data for the backfile is being loaded into the database during January 2007.

There will not be any update date (UP) written for the reclassified documents, but they can be identified by 20060101/UPIC. <<<

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FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES, SEE

<http://scientific.thomson.com/support/patents/coverage/latestupdates/>

PLEASE BE AWARE OF THE NEW IPC REFORM IN 2006, SEE

[http://www.stn-international.de/stndatabases/details/ipc\\_reform.html](http://www.stn-international.de/stndatabases/details/ipc_reform.html) and <http://scientific.thomson.com/media/scpdf/ipcrdwpi.pdf>

>>> FOR DETAILS ON THE NEW AND ENHANCED DERWENT WORLD PATENTS INDEX PLEASE SEE

[http://www.stn-international.de/stndatabases/details/dwpi\\_r.html](http://www.stn-international.de/stndatabases/details/dwpi_r.html) <<<

FILE STNGUIDE

FILE CONTAINS CURRENT INFORMATION.

LAST RELOADED: Mar 9, 2007 (20070309/UP).

FILE FROSTI

FILE LAST UPDATED: 12 MAR 2007 <20070312/UP>

FILE COVERS 1972 TO DATE.

>>> SIMULTANEOUS LEFT AND RIGHT TRUNCATION IS AVAILABLE IN THE BASIC INDEX (/BI) FIELD <<<

FILE FSTA

FILE LAST UPDATED: 13 MAR 2007 <20070313/UP>

FILE COVERS 1969 TO DATE.

>>> SIMULTANEOUS LEFT AND RIGHT TRUNCATION AVAILABLE IN THE BASIC INDEX (/BI) FIELD <<<

FILE FOMAD

FILE LAST UPDATED: 12 MAR 2007 <20070312/UP>

FILE COVERS 1982 TO DATE.